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SELF-SERVICE GASOLINE RETAILING

by



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A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF BUSINESS ADMINISTRATION

FACULTY OF BUSINESS ADMINISTRATION AND COMMERCE

EDMONTON, ALBERTA

SPRING 1970

UNIVERSITY OF ALBERTA
FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled Self-Service Gasoline Retailing, submitted by Ronald M. Farris in partial fulfillment of the requirements for the degree of Master of Business Administration.

ABSTRACT

The petroleum industry has been closely surveyed by many economists, and several recommendations for improving competition have been recorded. Realizing the political ramification of industry reorganization, this thesis has examined the concept of self-service in gasoline distribution as a practical remedy for encouraging workable competition within the petroleum industry.

The structure of the petroleum industry is reviewed together with the current marketing strategy of major integrated oil companies. Non-price competition is analyzed in light of the importance of price as a consumer buying motive. Current market trends of self-service growth are examined and a feasibility study of a self-service station, applicable to the Edmonton retail gasoline market, is presented.

This thesis has concluded that industry reorganization at the marketing level will be facilitated by the encouragement of the self-service concept by aggressive independent marketers. Governments, however, must guarantee product supplies at competitive prices.

ACKNOWLEDGEMENT

During the several months spent in the research and writing of my thesis, I have been fortunate in receiving assistance and cooperation from many people. I wish to express my gratitude to my thesis advisor, Dr. R. L. Beard, and to members of the committee, Dr. G. Wills, Faculty of Business Administration, and Dr. V. R. Nyberg, Department of Educational Psychology, for their valuable encouragement and thoughtful advice.

For making marketing and cost data available to me, I am grateful to Mr. B. Hughes and Mr. A. Stuart from the Marketing Department of Gulf Oil Canada Limited.

A special thank you is also accorded to Dr. D. N. Thompson, Faculty of Business Administration, for his assistance in initiating my study, and to Mrs. Patricia de Vries for typing the manuscript.

To

Liz

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CHAPTER I

INTRODUCTION

The development of the petroleum industry has been closely studied, probed, examined and criticized by many economists. In an effort to ensure competition in an industry that is becoming more concentrated, and to remedy the imbalances created by vertical integration, many recommendations concerning industry reorganization have been voiced.

In the years 1937, 1938, 1939 and 1949, petroleum marketing divorce bills were introduced in the United States Congress demanding that the marketing of petroleum products be divorced from the business of production, refining, and transportation.¹ In 1950, the Department of Justice in the U.S. initiated civil action against several oil companies regarding the combination and conspiracy to monopolize and restrain trade. The item causing the greatest problem was the demand of the government that each company be divorced from selling refined petroleum products at retail. It was not until June of 1959 that the final judgement was entered, and while it prohibited price fixing agreements, there was no action taken regarding marketing divorce.²

¹ James S. Cross, "Vertical Integration In The Oil Industry", Harvard Law Review, Vol. 31, 1953, p.69.

² The Gasoline Marketing Enquiry Committee, Gasoline Marketing, December, 1968, p.65.

1
 Bain's extensive study of the petroleum industry re-
 2
 vealed that major oil companies make large profits in production,
 normal profits in refining and transportation, and only negligible
 profits in marketing. As a result, nonintegrated independent mar-
 3
 keters have claimed that the majors operate their marketing divi-
 sion at a loss to eliminate competition at the retail level; losses
 in marketing operations are then recouped with profits earned
 throughout the integrated channel. Bain stated that the major
 marketers' concern with non-price competition has led to high dis-
 tribution costs and associated excess capacity in service stations
 and labor. He suggested that intensified price competition at the
 retail level was necessary to substantially reduce the number of
 service stations and associated marketing expenditures. Should
 such competition not develop from independent marketers, Bain also
 agreed that refiners dispose of and be fully divorced from their
 retail outlets.

4
 Eugene Rostow concluded that the oil industry is mono-
 polistic in its organization. To increase competition and to

1
 Joe S. Bain, The Economics Of The Pacific Coast Petroleum Industry, Part III, Berkeley and Los Angeles: University of California Press, 1947, p.8.

2
 The majors generally include those firms listed among the top twenty in refining capacity.

3
 Gasoline jobbers who sell light oils under their own brand name are generally referred to as independents. They tend to be smaller non-integrated companies stressing lower gasoline retail prices.

4
 Eugene V. Rostow, A National Policy For The Oil Industry New Haven: Yale University Press, 1948, p.xiii.

eliminate the wastes associated with excessive size and monopoly, Rostow called for industry reorganization under the Sherman Act. He did not believe that marketing divorcement alone would be adequate and suggested therefore, that not only should the majors be divided into four separate corporations specializing in production, refining, transportation, and marketing; but that no segment of the market structure after reorganization should be controlled by a few large sellers or buyers.

The most recent report on the petroleum industry was presented to the Government of Alberta in December of 1968. Included was the recommendation of the Automotive Retailers' Association of Alberta that oil companies be divorced from the retailing of gasoline.¹ It was felt that the problems associated with retail gasoline marketing will be alleviated only when competition and free enterprise are allowed to operate.

While marketing divorcement is economically sound, history has recorded that it is not politically feasible. This study is concerned with the wastes of distribution and associated high retail prices that accrue to consumers. Specifically, this thesis has concluded that the full development of self-service gasoline retailing, by aggressive independent marketers, will have far reaching structural implications short of industry

¹
The Gasoline Marketing Enquiry Committee, op. cit.,
p.632.

reorganization. The major requirement is that the government guarantee independent marketers' assurance of product supplies at competitive prices. The ensuing revolution in retail gasoline distribution that may occur is not wholly incommensurate with what has already taken place in the grocery business.

"Many people find it hard to realize that there ever was a thriving establishment known as the corner grocery store. The supermarket has taken over with a powerful effectiveness. Yet the big food chains of the 1930's narrowly escaped being completely wiped out by the aggressive expansion of independent supermarkets. The first genuine supermarket was opened in 1930, in Jamaica, Long Island. By 1933, supermarkets were thriving in California, Ohio, Pennsylvania, and elsewhere; yet the established chains pompously ignored them. When they chose to notice them, it was with such derisive descriptions as cheap, horse and buggy, cracker barrel storekeeping, and unethical opportunities.

An executive of one big chain announced at the time that he found it hard to believe that people will drive for miles to shop for foods and sacrifice the personal service chains have perfected and to which Mrs. Consumer is accustomed. As late as 1936, the National Wholesale Grocers convention and the New Jersey Retail Grocers Association said there was nothing to fear. They said that the super's narrow appeal to the price buyer limited the size of their market. They had to draw from miles around. When imitators came, there would be wholesale liquidations as volume fell. The current high sales of the supers was said to be partly due to their novelty. Basically, people wanted convenient neighbourhood grocers. If the neighbourhood stores cooperate with their suppliers, pay attention to their costs, and improve their services, they would be able to weather the competition until it blew over.

It never blew over. The chains discovered that survival required going into the supermarket business. This meant the wholesale destruction of their huge investments in corner-store sites and in established distribution and merchandising methods. The companies with the courage of their convictions resolutely stuck to the corner store philosophy. They kept their pride but lost their shirts."

ORGANIZATION OF THE STUDY

This study examines the concept of self-service as it applies to the distribution of petroleum products. Both library research and field study were undertaken to review the literature on this subject and to prepare an analysis for a proposed outlet in Edmonton.

In Chapter II, the characteristics of gasoline, with special emphasis on the elasticity of demand and price-volume relationships as they affect the individual station, are reviewed. In Chapter III, the structure of the petroleum industry, and how this affects the marketing strategy of the majors, is studied. In Chapter IV, the development of the self-service gasoline re-tailing concept in the United States, Europe and Canada is outlined. The characteristics of the successful outlet are examined, together with the impact of the majors, dealers, and union upon the legal restrictions presently preventing the full development of this marketing concept. In Chapter V, an economic study is presented in which the expected sales volume, gross margin, and capital investment of Edmonton's first self-service station are analyzed to determine the feasibility of the outlet. In the final chapter, recommendations are made for improving consumer free choice within the market place.

CHAPTER II

GASOLINE AS A CONSUMER PRODUCT

This chapter reviews the characteristics of gasoline as a consumer product, with emphasis on the elasticity of demand and price-volume relationships as they affect the individual service station. Since the success of the self-serve outlet depends upon the best combination of sales volume and price which will yield maximum gross profit, it is imperative that all aspects of the product be reviewed.

THE CHARACTERISTICS OF GASOLINE

Since gasoline is mainly used as a source of energy for internal combustion engines in automobiles, its demand is derived from the use of transportation. There are no close substitutes for the product. It is physically consumed while being used, and is purchased frequently in small volumes from outlets (service stations) specifically constructed for its distribution. The following table outlines the market characteristics of gasoline.

TABLE I

MARKET CHARACTERISTICS OF GASOLINE

<u>Demand Factors</u>	<u>Gasoline</u>
1. Numerous or few buyers of commodity.	Large numbers of small buyers.
2. Types of users of product.	Consumers and producers. [#]
3. Degree to which buyers are informed.	Not very well informed, especially about product quality.
4. Demand for product, primary or derived.	Demand derived from the need for transportation.
5. Product a luxury or a necessity.	Necessity.
6. Postponability of demand.	Product not durable, hence demand not postponable except insofar as one can postpone basic need.
7. Degree of product differentiation among brands.	Considerable degree of differentiation especially for majors as against independents' products.
8. Purchases made as needed for stock or on contract.	Purchased largely as needed.
9. Expansibility of sales by promotional effort:	
Generic product	Opportunities not great for expansion by promotion.
One firm's product	Substantial opportunity for expansion on a non-price basis.
10. Degree of price elasticity:	
Generic product	Very low degree of price elasticity.
One firm's product	High degree.

TABLE I (Continued)

<u>Supply Factors</u>	<u>Gasoline</u>
1. Numerous or few sellers in industry.	Relatively small number in each area at refinery level; few direct competitors at marketing level.
2. Ease of entry into industry.	Fairly difficult at refinery level; easier at wholesale level; easy at retail level.
3. Product produced singularly or jointly with others.	Product produced jointly with others.*
4. Commodity transitory or durable.	Transitory good (product completely consumed in use).
5. Product offered at one or more than one quality level.	Product offered at two or more quality levels.
6. Homogeneity of product within quality levels.	High degree of near homogeneity.
7. Product subject to competition of close substitutes.	No close substitutes exist for most cases.
8. Degree of reproducibility to demand.	Product largely reproducible in accordance with market requirements.
9. Value of product in relation to weight or bulk.	High value (thus long-distance shipping practicable).‡
10. Need for widespread distribution unit in sale or product	Widespread retail units required.
11. Product subject to sales tax at federal, state, or local levels.	Product heavily taxed at state and federal levels.

While gasoline is mainly used for passenger cars, it is also required for buses, trucks, and tractors in the distribution of goods and services.

* But amount of each product is subject to some adjustment in refinery process.

‡ Imperial Oil Ltd. reported that a 6500 gallon tank truck can transport gasoline for approximately 80 cents per loaded mile. (.012 cents per gallon per mile.)

Source: Ralph Cassady, Jr., Price Making And Price Behavior In The Petroleum Industry, Volume 1, New Haven: Yale University Press, 1954, pp.20-22.

THE DEMAND FOR GASOLINE AT THE INDUSTRY LEVEL

Since there are no practical substitutes for gasoline, the total industry demand is quite insensitive to price changes. As a result, economists have concluded that the demand for gasoline is inelastic.¹ Thus, an increase or decrease in the price of gasoline will have only a negligible effect on the volume sold.

Cassady and Jones contrast the demand for gasoline with that of other products as follows:

- " (1) Unlike some products (e.g. candy), gasoline as such is not a product for which the consumer has a desire. Gasoline is useful not in and of itself but because it makes possible the use of products which do directly satisfy wants.
- (2) Unlike the sale of certain types of products (e.g. automatic home laundries), the sale of gasoline does not have the effect of removing the buyer from the market, thus altering the demand curve. Rather, the product is a repeat-purchase type of commodity which must be acquired regularly and often.
- (3) Unlike some products (e.g. mouthwash), gasoline is a necessity of life in the American economy and one for which no close substitutes exist. Consequently, gasoline would probably be consumed in much the same quantity even if no sales-promotional effort were made.

1

Stanford Research Institute, An Analysis of Competitive Price Behavior In The British Columbia Petroleum Industry, 1964 p.VIII-3.

- " (4) Unlike certain types of commodities (e.g. copper), gasoline is largely a single use product. The lower part of the generic demand schedule includes few, if any, persons who would not buy at the higher price and indeed, relatively few, would buy less at the higher than the lower price.
- (5) Unlike certain products (e.g. women's stockings), gasoline is used up in initial consumption.* Because of this, and because consumer storage is not practical, gasoline is a product for which postponement of purchase is normally impossible.
- (6) Unlike the buying habits affecting most products, the habits of the consumer buyer may be radically different at one time than another¹, depending upon the nature of the activity in which he is engaged at the time of purchase. Thus, the buyer is likely to react differently to the offerings of gasoline dealers upon whether he is on a trip or driving around town.² "

*

Gasoline cannot be used over and over again as it is physically consumed when in use.

1

See Ralph Cassady Jr. and Wylie L. Jones, The Nature of Competition In Gasoline Distribution At The Retail Level, Berkeley and Los Angeles: The University of California Press, 1951, p.12; According to a study made by Alfred Politz Inc. for the Hearst Newspapers in 1947 (Motorists talk in 10 Hearst Newspaper Cities Coast to Coast), the most important reasons for patronizing particular stations given by Los Angeles motorists were as follows:

When at Home

- (1) Personality of attendant
- (2) Convenient location
- (3) Service given

When Touring

- (1) Appearance of station
- (2) Brand of gasoline
- (3) Reputation for clean rest-rooms.

2

Ibid.

CONSUMER BUYING MOTIVES

Mr. R. A. Swensrud, Vice-President of Standard Oil Company of Ohio, testifying before the Temporary National Economic Committee in 1939, stated the following: "The customer patronizing a service station is buying a compound of a physical product, ready availability, and a considerable variety of services. In survey after survey as to why customers patronize particular stations, convenience and personal relationships consistently stand¹ among the three or four leading factors."

Several studies attempting to determine the buying motives of gasoline consumers have been made by oil companies. The following factors seem to be the results of such studies:

1. Convenient location.
2. Amount and quality of service.
3. Brand of gasoline.
4. Personality and courtesy of gasoline station attendants.
5. Ease of driving in and out of station.
6. Appearance of station, cleanliness of facilities.
7. Possession of a credit card.
8. Low price.²

¹
Joe S. Bain, The Economics of the Pacific Coast Petroleum Industry, Berkeley and Los Angeles: University of California Press, Volume II, 1945, p.243.

²
Cassady and Jones, op.cit. pp. 28-29.

Cassady suggests that these surveys underplay the importance of price because they are not properly constructed to overcome the bias of getting at such a basic motive as low price.

While the above consumer motives were determined over twenty years ago, there has been relatively little change in major oil company marketing strategy. Consistently the majors have attempted to underplay the importance of price while stressing non-price factors in an effort to stabilize the market as a whole.

THE DEMAND FOR GASOLINE AT THE SERVICE STATION LEVEL

The importance of price as a basic buying motive is revealed by the fact that while total industry demand is inelastic, the demand for gasoline from a particular firm or service station is elastic.¹ Thus, the volume sold from a service station is highly dependant upon the price charged. There are several reasons for this. First, although no close substitutes exist for gasoline, the consumer can easily switch his purchase to the various brands and outlets in response to price changes. Second, as a result of this substitutability, consumers are not loyal to any particular brand. Third, the consumer is highly mobile and can purchase gasoline anywhere within his travels. Fourth, while most consumer sur-

¹ Stanford Research Institute, op.cit., p.VIII-6.

veys underplay the importance of price, some motorists are highly price conscious.¹ A survey in Montreal indicated that consumers will begin switching their purchases in significant numbers when price differentials reach or exceed one cent. It was also revealed that a larger price differential is required to attract customers away from a major brand to a private brand than switch² from one advertised brand to another one.

MARKET INTERACTIONS

Two types of markets for gasoline may be distinguished as disjoint and contiguous.³ A disjoint market is isolated from other markets in that economic conditions within it are not affected by other market activities and in turn does not affect conditions in other markets. Developments in contiguous markets, however, are continuously affected by economic conditions that exist elsewhere in neighboring areas. The interaction between markets then is determined by the traffic flow that exists between them. Thus, two markets are said to be contiguous when they are linked together by traffic flows.

¹
Ibid, p.VIII-8.

²
Imperial Oil Ltd., Presentation To The Royal Commission On Gasoline Price Structure In British Columbia, 1965, p.IX-38.

³
Ibid, pp. VIII-133-135.

In gasoline markets that are disjoint, prices are determined independently by economic demand supply conditions. As a result, total demand in these markets is inelastic. The demand for gasoline in contiguous markets, however, is highly elastic reflecting the substitution of products from alternate market areas.

This elasticity of demand between contiguous markets is called cross-elasticity of markets and the extent of this cross-elasticity depends largely upon the mobility of the consumer, the traffic flow, and the substitutability of gasolines as a product.¹ Cross-elasticity of markets is similar to cross-elasticity between service station outlets. If the price at one location is too high, the consumer can shift his purchase to the lower priced market or outlet. This is the reason why price differentials are not too great within each market area. The mobility of the consumer and the pressure of competition will prevent large price differences from developing.

It is this situation that presents an opportunity to the independent marketer. By strategically locating a few self-service outlets, by reducing overhead to a minimum, and by pricing so as to appeal to the price conscious segment of the market, a high volume, low cost operation can be developed. The nature of contiguous markets presents a problem for the major marketers. Should

¹
Ibid.

they try to meet the self-serve's prices with their outlets nearby, they risk the price stability of all their outlets in the market area. It is no wonder then that the majors have not welcomed this concept with open arms and have therefore been one of the forces in preventing its full development.

PRICE VOLUME RELATIONSHIPS

Aggressive price cutting outlets realize that a significant segment of the consumer gasoline market is price conscious. Learned's gasoline pricing study in Ohio revealed that private brand outlets were large volume operations which priced substantially below the norm.¹ Out of 12 price cutting brand outlets in Akron, only 1 had estimated sales of under 20,000 gallons per month; 4 had estimated sales of between 30,000 and 40,000 gallons; 4 between 40,000 and 60,000; and 2 had estimated sales of 100,000 gallons or more per month. While these dealers initiated 195 price quotations that were below the norm, only 6 of this total were under by less than 1 cent; 80 were under between 1 and 1.9 cents; 92 were between 2 and 2.9 cents; and 17 were under by 3 cents or more. In contrast, there were only three quotations

¹
Edmund P. Learned and Catherine C. Ellsworth, Gasoline Pricing In Ohio, Division of Research, Graduate School of Business, Harvard University, Boston, 1959, p.147.

above the norm from the entire group, and these were over by an insignificant .2 cents or .1 cent. Although private branders constituted less than 2 per cent of the City's total dealer population, their aggressive behavior and large volume outlets gave them a strong influence over the whole market.

The following are two price-volume tables from Learned and Ellsworth's pricing studies in Ohio.

TABLE II

PRICE REDUCTIONS AND PERCENTAGE LOSS OR GAIN IN SALES FOR 18 DEALERS CHARACTERISTICALLY
PRICING UNDER THE NORM IN THREE DEPRESSED - PRICE AREAS, CITY OF AKRON.

Dealer	Regular Gasoline Price Reductions March 1953 - March 1955			Regular Gasoline Price Reductions March 1954 - December 1954			%Loss or Gain Total Sales 1954/1953	Dealer Size-Class* (Gals. in Thousands) 1953
	No. Periods Cutting Out of 9	Average ¢ per Gal. Reduction		No. Periods Cutting Out of 9	Average ¢ per Gal. Reduction			
A	9	1.3¢		0 - 4.9% Loss in Sales 4	1.2¢		-4.46	20 and over
B	8	.9		0 - 4.9% Gain in Sales 4	1.0	4.87		10 - 19.9
C	5	1.0		3	1.0	1.96		10 - 19.9
D	3	1.0		2	1.0	4.62		10 - 19.9
E	9	1.1		5 - 5.9% Gain in Sales 4	1.0	6.40		20 and over
F	4	1.1		10 - 14.9% Gain in Sales 2	1.4	12.30		10 - 19.9
G	3	1.0		15 - 19.9% Gain in Sales 3	1.0	19.37		20 and over
H	8	1.1		25% or over Gain in Sales 4	1.0	53.59		20 and over
I	8	1.1		4	1.0	85.33		20 and over
J	8	1.1		4	1.5	92.83		5 - 9.9
K	7	.9		4	1.0	114.13		5 - 9.9
L	5	1.0		4	1.0	95.76		10 - 19.9
M	4	1.0		3	1.0	41.74		20 and over
N	4	1.1		3	1.0	29.00		20 and over
O	4	1.6		3	1.7	158.01		0 - 4.9
P	3	1.1		2	1.2	34.67		20 and over
Q	3	1.0		3	1.0	30.76		20 and over
R	3	1.0		1	1.0	39.29		5 - 9.9

* Based on average monthly total sales.

Source: Edmund P. Learned and Catherine C. Ellsworth, Gasoline Pricing In Ohio, Division of Research, Graduate School of Business, Harvard University, Boston, 1959, p.197.

TABLE III

PRICE VOLUME DATA FOR 36 DEALERS CHARACTERISTICALLY
PRICING THE SAME AS STANDARD OIL SALARY SERVICE
STATIONS IN THREE DEPRESSED PRICE AREAS, CITY OF
AKRON, OHIO.

1954 Compared To 1953

<u>Dealer</u>	<u>Percentage Loss or Gain in Total Sales</u>	<u>Dealer Size-Class* (Gals. in Thousands) 1953</u>
<u>25% and Over Loss in Sales</u>		
AA	-38.66	10 - 19.9
BB	-35.71	0 - 4.9
<u>20 - 24.9% Loss in Sales</u>		
CC	-24.81	0 - 4.9
<u>15 - 19.9% Loss in Sales</u>		
DD	-16.40	10 - 19.9
EE	-15.56	5 - 9.9
<u>10 - 14.9% Loss in Sales</u>		
FF	-14.40	20 and over
GG	-13.80	20 and over
HH	-10.91	20 and over
<u>5 - 9.9% Loss in Sales</u>		
II	- 9.86	10 - 19.9
JJ	- 9.64	20 and Over
KK	- 7.50	0 - 4.9
LL	- 6.86	20 and over
MM	- 5.04	5 - 9.9
<u>0 - 4.9% Loss in Sales</u>		
NN	- 3.86	20 and over
OO	- 3.79	20 and over
PP	- 3.59	0 - 4.9
QQ	- 3.17	20 and over
RR	- 2.32	20 and over
<u>0 - 4.9 Gain in Sales</u>		
SS	1.55	10 - 19.9
TT	2.06	20 and over
UU	3.31	5 - 9.9
VV	4.04	20 and over
WW	4.42	10 - 19.9
XX	4.89	10 - 19.9

TABLE III (Continued)

	<u>5 - 9.9% Gain in Sales</u>	
YY	5.25	20 and over
ZZ	6.35	10 - 19.9
AAA	7.37	5 - 9.9
BBB	8.25	10 - 19.9
CCC	9.27	20 and over
	<u>10 - 14.9% Gain in Sales</u>	
DDD	10.55	5 - 9.9
EEE	12.11	20 and over
FFF	13.19	0 - 5.9
	<u>15 - 19.9% Gain in Sales</u>	
GGG	15.25	10 - 19.9
HHH	16.64	10 - 19.9
	<u>25% and Over Gain in Sales</u>	
III	28.46	10 - 19.9
JJJ	49.22	20 and over

Stations owned and operated by the company.

* Based on average monthly total sales.

Source: Edmund P. Learned and Catherine C. Ellsworth, Gasoline Pricing In Ohio, Division of Research, Graduate School of Business, Harvard University, Boston, 1959, p.198.

Table II includes 18 out of 20 outlets that characteristically priced below Standard Stations and Table III includes 36 out of 77 that characteristically priced the same as Standard Stations. These tables show that price cutters generally achieved much greater growth in total sales in 1954 over 1953 than did dealers who followed the Standard Station norm. Out of 18 cutters, only one (5.5%) experienced a loss in total sales as compared with 18 (50%) out of 36 in the noncutting group. The sole loser among the cutters lost less than 5% of his volume, whereas 13 in the noncutting group lost in excess of this percentage. Regarding percentage sales gains, of the 18 cutters, 11 (61%) had gains of 25% or over, while only 2 (6%) of the normal pricers gained this amount.

The average sales gain and loss for the price cutters and non price cutters in three depressed price areas in Akron are as follows:

TABLE IV

PERCENTAGE CHANGE IN VOLUME FOR PRICE CUTTING AND
NONCUTTING DEALERS - BY AREAS - 1954/1953

	West Exchange St.	East Market St.	Main St. - High St.
Cutters	44.74	27.86	18.55
Noncutters	4.93	9.88	-0.06
All Dealers	14.36	17.17	4.64

Source: Edmund P. Learned and Catherine C. Ellsworth, Gasoline Pricing In Ohio, Division of Research, Graduate School of Business, Harvard University, Boston, 1959, p.198.

It is evident that the price cutting stations had significantly greater sales increases than the noncutters. By classifying the 18 cutters and 36 noncutters by size rather than area, the cutters again registered higher sales increases than the normal pricers.

TABLE V

PERCENTAGE CHANGE IN VOLUME FOR PRICE CUTTING
AND NONCUTTING DEALERS BY SIZE-CLASSES, THREE
DEPRESSED-PRICE AREAS
1954/1953

<u>Size Class</u> Gals. per Month	<u>Price Cutters</u>		<u>Noncutting Dealers</u>	
	No.	% Gain	No.	% Gain
0 - 4,999	1	158.01	5	-11.25
5,000 - 9,999	3	82.09	5	1.40
10,000 -19,999	5	15.93	11	1.71
20,000 and over	9	21.98	15	- 1.46
Total	18	24.66	36	.53

Source: Edmund P. Learned and Catherine C. Ellsworth, Gasoline Pricing In Ohio, Division of Research, Graduate School of Business, Harvard University, Boston, 1959, p.198.

While no exact mathematical formula regarding gasoline price volume relationships can be obtained because of numerous other influences, such as the location of the outlet, facilities offered, brand carried, use of other incentives, duration of price cut, etc., evidence suggests that a price reduction of one cent or more below the Standard norm generally produced large percentage increases in

the sales of an individual dealer. The deeper the cut, the greater was the probability that sales would be attracted. Although dealers who cut prices tended to grow at a faster rate than the average of the market, there were many variations in their rate of growth. Generally, private brand dealers had to cut prices more substantially than major brand dealers in order to attract greatly increased volume. Also, it was discovered that dealers who cut prices over a long period of time continued to grow, but their rate of growth declined.

The growing market penetration of private brand market-
 1 ers and their influence over the level of retail prices in many areas suggest that price leadership is falling into their hands. While a major supplier may remain the nominal leader, aggressive and efficient private branders have a significant influence over the prices that the major sets. One major marketing vice-president described the well managed private brand operations as follows:

"Shell has studied the operations of the new type of market leader in a number of markets throughout the country. Here's what we've found.

First, the pacesetter has outlets which are relatively few in number, large in volume, and strategically located. They do a big volume. They show a profit on a lower retail price. Many of them are Company operated.

Secondly, we find the pacesetter has worked out a very tight transportation system. He hauls directly from his source of supply to his service station. He bypasses intermediate distribution points or does with-

1
Ibid, p.158.

"out them altogether. Thus, he cuts down on investment in plant. He uses fewer and larger trucks. He employs fewer drivers. Everything is planned for minimum sales cost and minimum overhead.

Thirdly, he supports his stations with large, aggressive advertising and sales promotion programs, designed to attract new customers to his stations and to keep them coming back once they have made the first stop.

There is no mystery in this. It has happened in drugs, in electrical appliances, in groceries. Wherever there is a good market or a good potential market being supplied at prices that include an excessive retail markup, some fast moving, hard-hitting operator has moved in with a streamlined, low-cost outlet and proved that it is possible to give the public good products and services at better prices and still keep the business sound and profitable.

I think a lot of us in the oil industry have to take our hats off to some of these people who are showing us how things can be done in petroleum marketing."¹

Private branders entered the British Columbia market relying mostly on price discounts to attract customers. Their volumes were not significant in 1949, but by 1962 they had improved their market share to six per cent of all gasoline sales made through retail outlets within the province. In Metropolitan Vancouver they accounted for an estimated eleven per cent of retail sales by 1962.²

¹
Ibid, p.162.

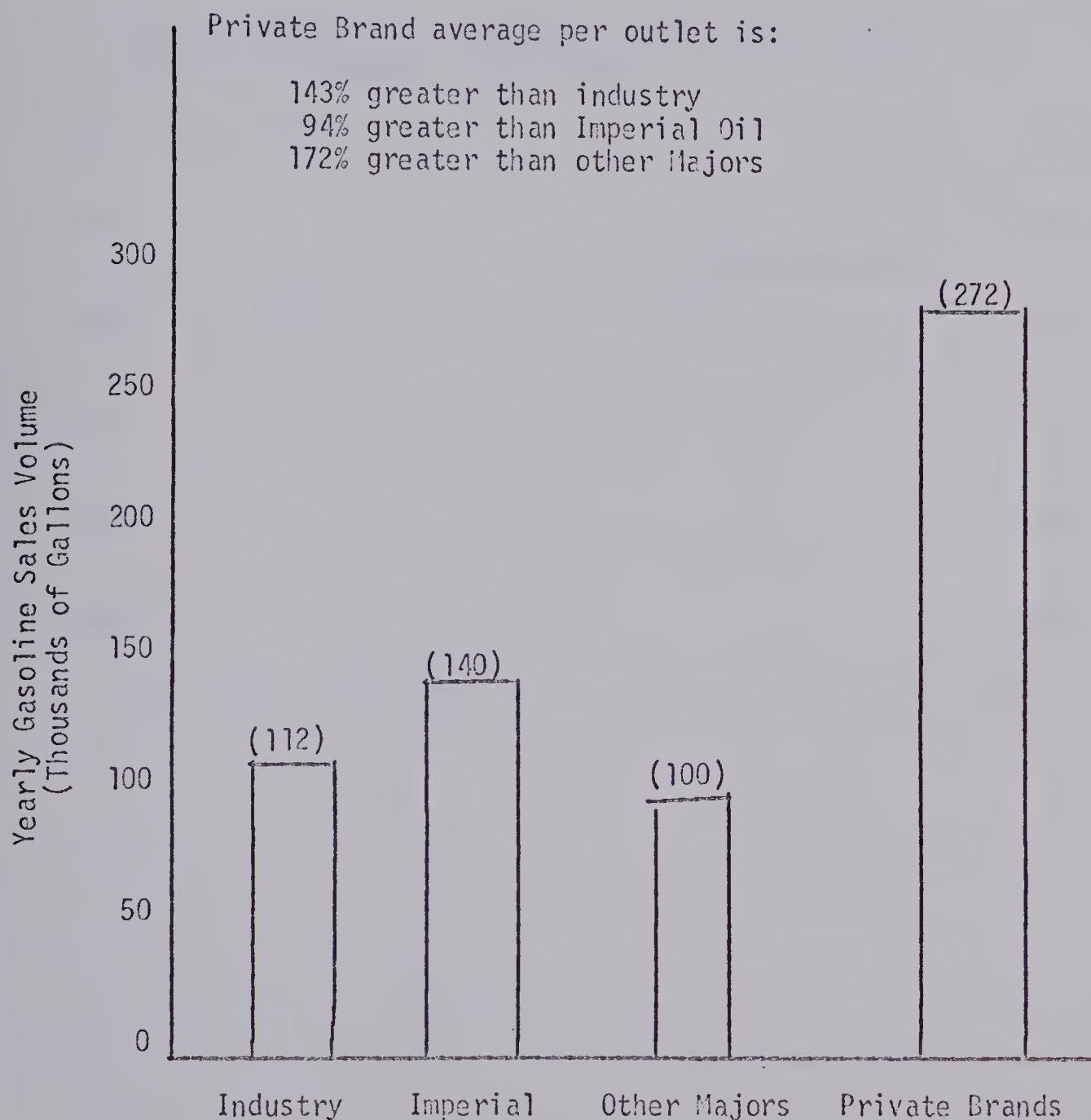
²
Imperial Oil Ltd., op.cit., p.IX-38.

Table IV shows the estimated average volumes handled by major brand and private brand outlets in the lower mainland and Victoria markets. While these volumes represent Imperial's estimates, they are believed¹ to be reasonably accurate. Table IV shows that industry outlets sell an average of 112,000 gallons a year, Imperial stations average 140,000 and other major brand outlets average 100,000. Private branders, however, average 272,000 gallons. In other words, the private brand outlet is doing 94% more business than an Esso station on the average, 143 per cent more than industry generally, and 172% more than majors other than Imperial.

¹ This was verified with marketing representatives from Gulf Canada Ltd.

TABLE VI

VANCOUVER LOWER MAINLAND - VICTORIA
EFFECT OF PRICE DISCOUNTING IN TERMS
OF STATION AVERAGES

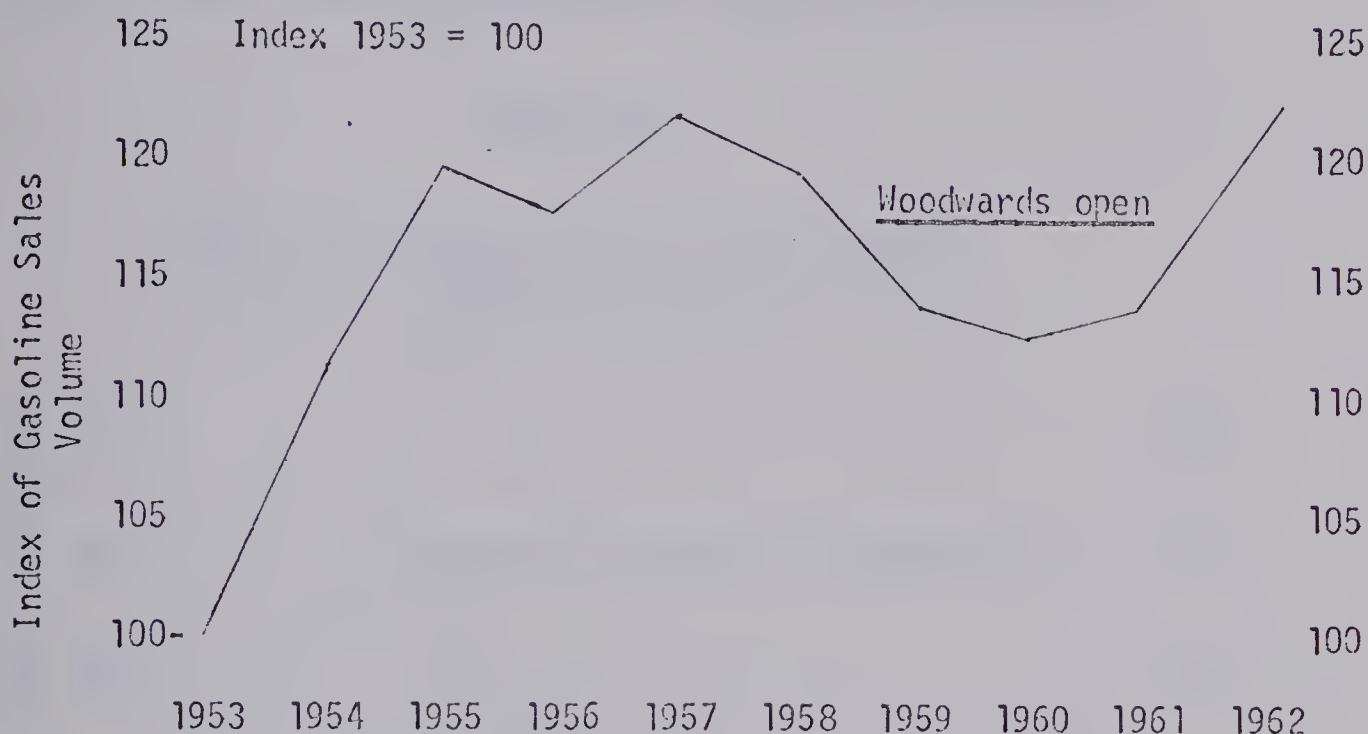


Source: Imperial Oil Limited, Presentation To The Royal Commission on Gasoline Price Structures In British Columbia, 1965 p, IX-40.

Table VII traces the sales volume of six Esso stations in a Vancouver market and illustrates the damaging impact that occurred when a new price cutting outlet opened nearby.

TABLE VII

EFFECT OF WOODWARD'S OAKRIDGE OUTLET ON IMPERIAL'S
GROWTH IN IMMEDIATE TRADING AREA - 1953 - 1962

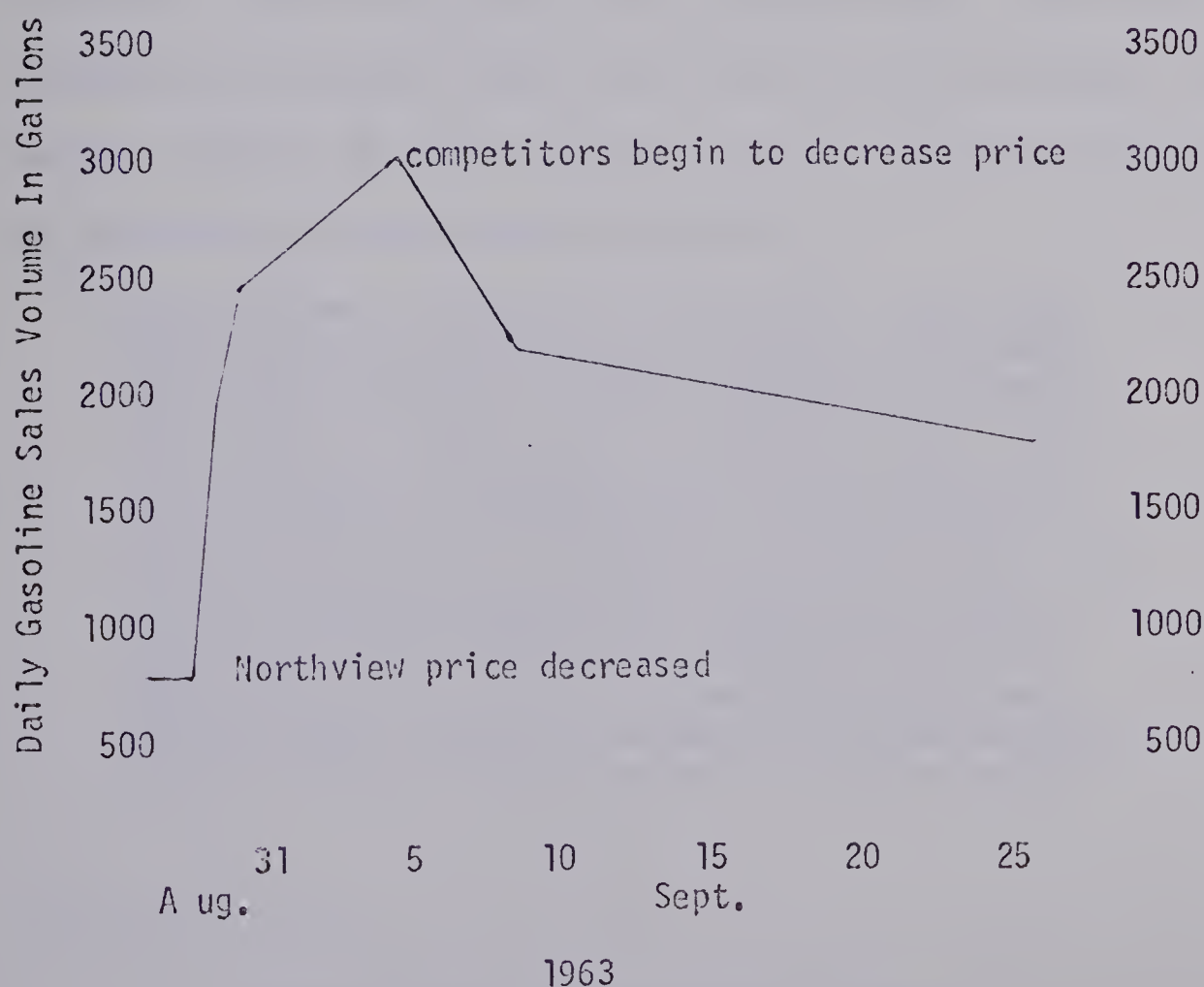


Source: Imperial Oil Limited, Presentation To The
Royal Commission On Gasoline Price Structure In British Columbia,
1965, p. IX-44.

Another study of the impact of price on sales volume is revealed in the history of Northview Esso in Nanaimo. The day before the station cut its price by approximately 2 cents per gallon it sold 804 gallons. The following day, however, sales more than doubled to 1,998 gallons and within a week reached 3,000 gallons. At this stage, competition moved in to reduce the gap in price, and sales declined to the 2,000 gallon level.

TABLE VIII

EFFECT OF PRICE DECREASE ON DAILY GASOLINE
VOLUME AT IMPERIAL OIL NORTHVIEW STATION
IN NANAIMO, B. C.



Source: Imperial Oil Limited, Presentation To The
Royal Commission Gasoline Price Structure In British Columbia
1965, p. IX-42.

The pulling power of private brand price cutting stations was revealed by a study of two Canadian Tire outlets in Toronto. By tabulating the vehicles patronizing these outlets and then tracing their home origin through their license plates, it was shown that less than seven per cent of the consumers patronizing one outlet and less than 10 per cent from the second outlet lived within 3/4 of a mile radius from the outlet they patronized. This compares with the typical station which obtains approximately 40 to 45 per cent of its business from consumers living within the 3/4 mile radius.

One can only conclude that price is one of the most important factors affecting retail gasoline sales. While major marketers have largely ignored this factor, private branders are making, and will no doubt continue to make, significant advances by appealing to price conscious consumers.

"Consumers want prices as low as possible consistent with quality, convenience, and service. They want alternative sources of supply, progressive research, and freedom of entry into the industry - one of the best guarantees of progress. Consumers seem to have little loyalty to the individual gasoline retailer, especially when their pocket books are affected. We need only draw the dealer's attention to what happened in another convenience - necessity business, namely the grocery trade. The old corner grocery store gave way to the larger combination meat and grocery outlet, and these in turn to the large super-markets with their strong emphasis on price appeal.

¹
Imperial Oil Limited, op.cit. p.18-47.

"The economy mindedness of consumers and their tendency to shop for the best combination of price, quality, and service cannot be overlooked by either gasoline dealers or suppliers. Any prediction regarding the future must take these consumer values into account."¹

¹ Learned and Ellsworth, *op.cit.*, pp.249-250.

CHAPTER III

THE STRUCTURE OF THE PETROLEUM INDUSTRY

This chapter reviews the structure of the petroleum industry with special reference to the influences that vertical integration and prorationing have on marketing policies. A review of some of the criticisms and recommendations of economists who have looked at price competition in gasoline marketing is also included.

THE PRESSURE OF CRUDE OIL

Historically, vertical integration was born out of self-protection as the industry shifted from periods of crude oil shortages to periods of excess capacity. It was in times of product scarcity that marketers integrated backward into refining and production to insure continued product supply. Correspondingly, in times of over supply, producers integrated forward into refining and marketing in an effort to obtain assured outlets for their crude.

The most dominating factor affecting marketing operations was the tremendous pressure of crude oil supplies during the 1920-35 era. Stimulated by the expanding demand for gasoline to power internal combustion engines, producers invested heavily in exploration. It was during this period, with the discoveries of new crude fields, that productive capacity soon outstripped and

surpassed demand. The following reasons for this have been cited:

1. Since the discovery of an oil field is dependant upon the results of wildcat drilling, product was brought to market even when there was no need in terms of the present demand supply situation.
2. Due to the large and relatively inflexible nature of production investment, producers could not easily adjust their outlays or make use of their equipment for other purposes when the over abundant product reduced the price of crude. As a result, investment once committed tended to be relatively inflexible to market conditions. Also, due to heavy start up costs, the most economical use of productive equipment was in continuous operation; it was better to recover a portion against fixed costs for a short time, than to stop production altogether in response to the level of product prices.
3. Perhaps the most important factor causing over production, before the introduction of the prorationing laws, was the law of capture which ruled that oil obtained below the ground belonged to the owner of the surface. It was in this situation that producers were compelled to produce a field as quickly as possible to prevent drainage from competitors nearby.¹

¹
John G. McLean and Robert Wm. Haigh, The Growth of Integrated Oil Companies, Division of Research, Graduate School of Business Administration, Harvard University, Boston, 1954, pp. 82-84.

Thus, in a market situation of excess product, vertical integration provided some measure of price protection.¹ Those firms who could afford pipeline investments were not only able to enjoy savings from the low cost method of transportation, but also, were able to gain additional advantage from smaller firms unable to undertake such an investment. Similarly, forward integration into marketing allowed the producers assured outlets for their crude, and as a result they were in a much better position to increase their share of the market. Thus, investments in marketing, under the pressures of excess product supplies, were undertaken basically as a means of providing controlled outlets for the sale of crude products. "The marketing investments are made to sell product, only secondly to earn a separately identifiable profit."²

The advantages of vertical integration during this period, however, were still unable to prevent the decline in the price of crude oil. In an attempt to counteract this trend, the majors undertook programs of (1) product exchanges, and (2) purchases of surplus gasoline from independent refiners for disposal through their own outlets.³ Through product exchanges, the majors hoped to

¹ Melvin de Chazeau and Alfred E. Kahn, Integration And Competition In The Petroleum Industry, Volume 3, New Haven: Yale University Press, 1959, p.430.

² Ibid, p.368.

³ Ibid, p.432.

level out imbalances as they occurred in various markets. Also, the underlying strategy behind the purchase of product from independent refiners was not only to support the selling price of gasoline, but to stabilize the price of crude. By maintaining the price of gasoline and directing it through their own controlled outlets, the majors had hoped to protect their own selling price.

Without control over supply however, the majors were unsuccessful in stabilizing product prices. The pressure of crude oil supplies managed to reach the independent refiner who in turn resold to the non-integrated jobbers at low prices. It was this setting that led to the decline of crude prices by the late 1920's¹ and early 30's.

Only by the enactment of the prorationing laws of 1935, which subjected the production of crude oil to governmental regulations, were the majors able to proceed with a price policy unobtainable in earlier years. With cheap supplies of crude oil cut off,² the majors could stabilize the market through controlled branded channels of distribution, and supported by the production controls imposed by prorationing, they could obtain higher prices for their crude.³

¹ Ibid, pp.66-67, "The posted price of Midcontinent crude, which reached a high of \$2.29 a barrel in middle and late 1926, ranged between \$1.28 and \$1.45 in the next four years, and dropped to \$0.33 in mid-1931, when oil sold in East Texas for as little as ten cents a barrel."

² See McLean and Haigh, *op.cit.*, pp.587-599, for a detailed account of the damaging effects of prorationing on independent refiners.

³ Melvin de Chazeau and Alfred E. Kahn, *op.cit.*, p.441.

"The oil conservation program was born in time of surplus. Started in the late 1920's by the major oil companies, it was intended to raise prices, not to increase the future supply of oil. The program was one of straight output restriction. At first the Courts struck down state prorationing orders on the grounds that commissions had no authority to issue them because they were intended to stabilize prices, not conserve oil. But the legislatures and the commissions gradually developed standards for determining allowable production that were not wholly inconsistent with the goals of conservation.

But the oil producing states have repeatedly turned down proposals to authorize their respective commissions to require the unified operation of oil pools - the starting point for a genuine conservation program. Instead, under the guise of conservation and the behest of the oil companies, these states have in effect set themselves up as regulators of the nation's supply of oil, primarily to insure reasonable prices to the producers within their states. The aim of proration has consistently been to restrict output to what the market can absorb at a price satisfactory to oil producers and oil producing states."

While regulatory bodies do not directly fix prices, they do however specify the conditions under which buyers and sellers meet in the market place and thus indirectly influence price arrangements. "With the institution of effective state control over production, from about 1935 on, production became the strategic area for almost the first time in the history of the American industry. Entry remained free, and production control relatively unconcentrated; but for the first time the tyranny of a highly unstable and inelastic supply was curbed, the

market was effectively stabilized, and monopoly profits might now be secured by the successful producer."¹

Thus, higher crude prices unattainable through the process of vertical integration, were obtained through government regulation. "Proration is perhaps the last significant persistence of the early New Deal experiments in the collusion of government and big business to control production and prices."² Since prorationing, not only has the price of crude become more stable, but it has moved constantly upward.³

THE STRUCTURE OF THE INDUSTRY

The most outstanding characteristic of the world petroleum industry is the dominating position of eight large international companies. This group together with their tradenames are as follows:

<u>Company</u>	<u>Trade Name</u>
1. Standard Oil Company, New Jersey.....	Esso
2. The Royal Dutch-Shell Group of Companies.....	Shell
3. Gulf Oil Corporation.....	Gulf
4. The Texas Company.....	Texaco
5. Standard Oil Company of California.....	Chevron

¹ Melvin de Chazeau and Alfred E. Kahn, op.cit. p.117.

² Ronnie Dugger, "Oil And Politics", Atlantic, September 1969, p.76.

³ Melvin de Chazeau and Alfred E. Kah, op. cit., p.146.

<u>Company</u>	<u>Trade Name</u>
6. Socony Mobil Oil Company, Inc.....	Mobil
7. British Petroleum Company, Ltd.....	B. P.
8. The French Group (C.F.P. & E.R.A.P.).....	Total

In 1949, outside of the United States, Mexico, Russia, and Russian controlled countries, the first seven companies controlled the following:

(a) World reserves.....	92%
(b) World production.....	88%
(c) World refining capacity.....	77%
(d) World cracking capacity.....	85%
(e) World petroleum pipelines.....	100%
(f) Privately owned oil tanker tonnage.....	66-2/3%

These companies together with their subsidiaries have ventured into common production, pipelines, refinery, and marketing ventures throughout the world and have therefore a common interest in disposing of their crude. Through individual and joint ventures, this group owned 88.2% of the oil in free world exporting countries in 1965³. The following data illustrates the extent of this control.

¹
The Gasoline Marketing Enquiry Committee, op.cit., p.601.

²
Ibid, p.585.

³
Ibid, p.586.

1 CONTROL OVER MAJOR OIL EXPORTING AREAS

The international companies have exclusive control over Iranian oil through the Iranium Consortium as follows:

1. B. P.....	40%
2. Shell.....	14%
3. Esso.....	7%
4. Texaco.....	7%
5. Standard of California.....	7%
6. Mobil.....	7%
7. Gulf.....	7%
8. C.F.P. (French Group).....	6%

Five companies own 95% of Iraq Petroleum Co. Ltd., which in turn controls all the oil in Iraq, Tatar, The Trucial Coast, and other Middle East areas.

1. Shell.....	23.75%
2. B. P.....	23.75%
3. C.F.P. (French Group).....	23.75%
4. Mobil.....	11.375%
5. Esso.....	11.375%

Four companies effectively control all the oil in Saudi Arabia through ownership of the Arabian American Oil Company as follows:

1
Ibid, pp.571-620.

1. Esso..... 30%
2. Texaco..... 30%
3. Standard of California..... 30%
4. Mobil..... 10%

The oil reserves of Bahrein Island are controlled by the Bahrein Petroleum Co. Ltd. which is owned equally by Texaco and Standard of California. Another two companies, B.P. and Gulf, own all the oil of Kuwait.

Similarly, the oil reserves of the Caribbean area are under the control of these companies as follows:

Creole Petroleums (Venezuela).....	Esso	95.41%
Compania Shell de Venezuela Ltd.....	Shell	100%
Mene Grande (Venezuela).....	Gulf	50%
	Shell	25%
	Esso	25%
		<u>100%</u>
Texaco Maracaibo Incorporated.....	Texaco	100%
Texas Petroleum Company.....	Texaco	100%
Coro Petroleum Company.....	Texaco	100%
Venezuela Gulf Refining Co.....	Texaco	33-1/3%
	Gulf	33-1/3%
	Esso	16-2/3%
	Shell	16-2/3%
		<u>100%</u>
Compania de Petroles Group, Colombia, S.A.	Mobil	33-1/3%
	Calif.	33-1/3%
	Texaco	33-1/3%
		<u>100%</u>
Tropical Oil & 26 subsidiaries.....	Esso	83-5/8%

Trinidad Northern Areas Ltd.....	Shell	33-1/3%
	B.P.	33-1/3%
	Trini.	
	Lease-	33-1/3%
	Holds	
		<u>100%</u>

It is interesting to note that these same companies dominate the Canadian petroleum industry through the ownership of subsidiaries as follows:

Esso.....	Imperial Oil Limited.....	70%
Shell.....	Shell Canada Ltd.....	87.3%
Gulf.....	Gulf Canada Ltd.(formerly B.A.Oil).	65%
Texaco.....	Texaco Canada Ltd.....	68%
Standard of California...	Std.Oil Co. of British Colombia....	100%
Mobil.....	Mobil Oil Canada Ltd.....	100%
B. P.....	B. P. Canada Ltd.....	100%
French Group.....	French Petroleum Co. of Canada Ltd.	60.72%

Also, the subsidiaries of four of the international companies dominate marketing operations in Alberta as follows:

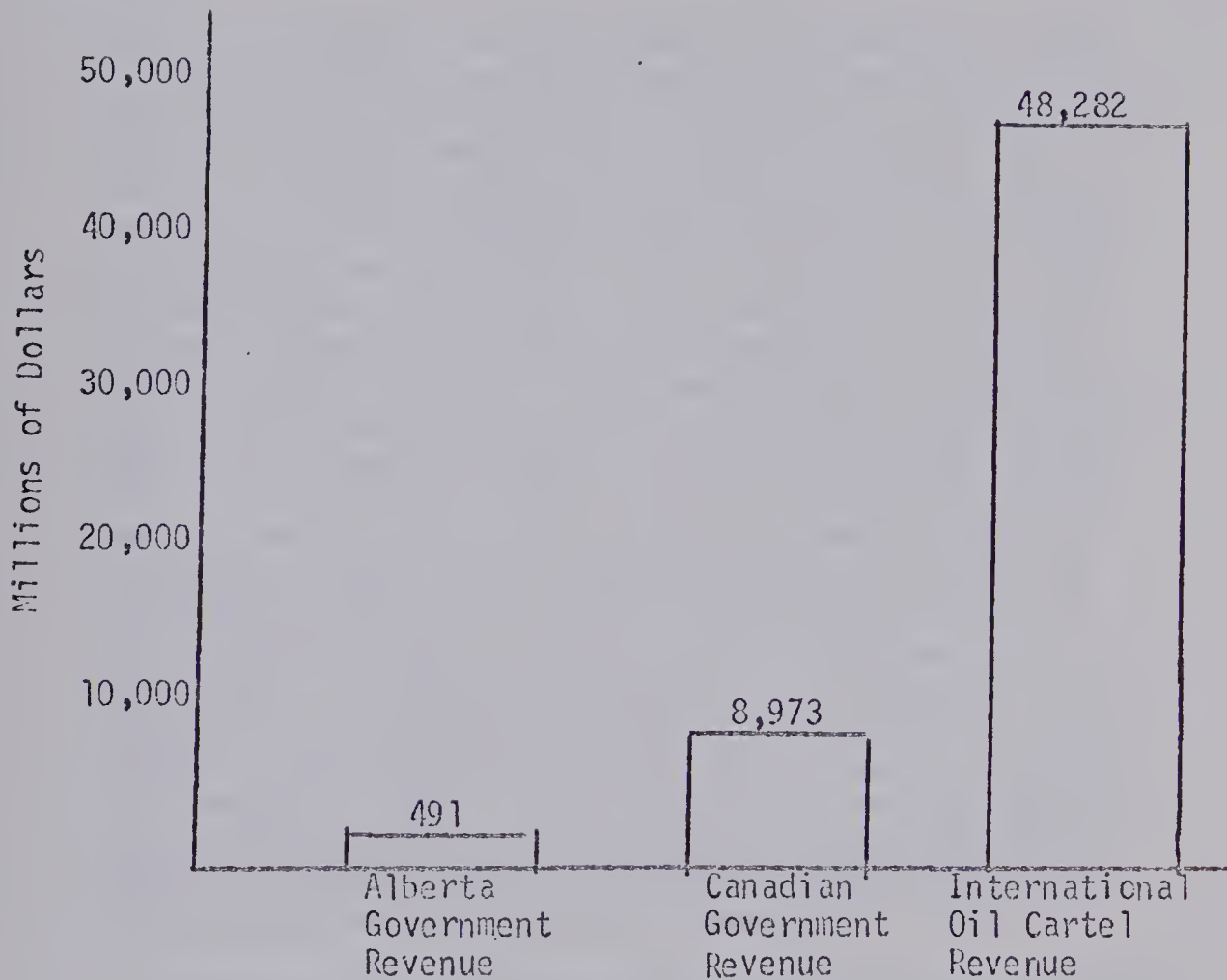
	<u>1965</u>		<u>1965</u>	
	Gasoline Sold		Retail Outlets	
	<u>Gallons</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Subsidiaries	222,756,000	86.5	2,761	87.9
Other Marketers	<u>34,680,000</u>	<u>13.5</u>	<u>378</u>	<u>12.1</u>
All	257,436,000	100.0	3,139	100.0

The Gasoline Marketing Enquiry Committee has termed the eight internationals a cartel; the colossal size of this group is revealed by the following table.

TABLE IX

GROSS REVENUE COMPARISON

Alberta Government, Canadian Government,
and International Oil Cartel - 1965
(Millions of Dollars)



Source: Gasoline Marketing Enquiry Committee, Gasoline Marketing, December 1968, p.570.

INFLUENCE ON WORLD PRICE

In such a market structure these corporations have little incentive to compete in such a way that would be detrimental to crude prices. This point is well illustrated by Hartshorn as follows:

"They are clearly in a situation of 'oligopoly' - that is, of competition between few sellers, as distinct on the one hand from single-firm monopoly and on the other from the perfect competition of many sellers in the market. Smaller independent operators existed; but at no stage of the integrated world oil trade were these as important as they were in the oil industry of the United States. Each major group, moreover, sold oil in many places; could press, but equally was vulnerable, on many fronts. Under conditions of oligopoly, action to alter price or rates of output by any one of them was certain to affect the general balance of the market for all the others. Each international group had to consider that if it cut the price of oil, its competitors would almost certainly match the cut and possibly cut further; so its initial decisions involved deciding how to react to the reactions that its move would be likely to provoke. This situation of oligopoly is frequently present in oil marketing. But for the international companies it existed on a wider than national scale. Price cutting to put pressure on a competitor in one market might bring pressure in return in some other part of the world where that competitor happened to be better placed."

Not only is the world price of crude high and relatively uniform, but it bears little relationship to costs of production in various areas. Until recently world crude prices were based on the cost of Texas oil fields. Thus, even though the cost of Texas crude is approximately \$2.00 per barrel in comparison to

1

J. E. Hartshorn, Oil Companies And Governments, Faber and Faber, London, 1962, pp. 131-132

Kuwait crude (produced at 7¢ per barrel), product obtained from either source was sold at the same price.¹ With such a cost differential tremendous profits accrue to the international group when disposing of their foreign crude at the artificially sustained price. The international companies, in opposition to independent producers, have therefore been the major force arguing for further production cutbacks in the United States.²

The structure of the petroleum industry, dominated by eight giant international companies, is clearly in the situation of an oligopoly. All companies realize their mutual interdependency; a price cut initiated by an aggressive firm attempting to increase its market share will be met by all companies in the industry. Competition has therefore shifted away from price to non-price appeals. This is certainly not new, it has happened in other industries. The problem in petroleum, however, is that marketing has been distorted by vertical integration and the artificially supported crude price at the producing level. That this industry has engendered numerous critics is no surprise.

MARKETING CRITICS

Since large profits are inherent in the price of crude oil, investment in marketing is not considered for the marketing

¹ The Gasoline Marketing Enquiry Committee, *op.cit.* p.597.

² Melvin de Chazeau and Alfred E. Kahn, *op.cit.* p.226.

profits as such but rather as outlets for disposing of the profitable crude.¹ It is this activity that has brought numerous charges suggesting that integrated companies subsidize losses in marketing against non-integrated marketers. Dr. Ise stated the following:

"It may be noted, finally, that competition between the major integrated companies on the one hand, and independent producers or refiners on the other, is not such as would be found in a genuinely competitive market. In a sense, the integrated companies and the independents are in different businesses. The integrated companies are in the business of taking oil from the ground... transporting and refining it, and selling refined products to ultimate consumers; independent refiners without production are in the business of buying crude oil from producers, refining it, and selling their products to jobbers or marketers. To some extent the two groups are in different businesses, and do not compete on even terms. The independent refiners must make their profits on refining operations or not at all; integrated companies might suffer losses on their business as a whole by recouping their refining losses in other operations. The significance of this may be seen in the present marketing situation. The marketing of oil products is apparently carried on at a heavy loss, which for independent marketers is a serious matter; but the high earnings of the integrated companies in other operations make up for their losses in marketing."²

With reference to the Report of the Blazer Committee which

¹
See de Chazeau and Kahn, op.cit., p.363, for the strategy of oil company operations quoted from Fortune in May of 1940. "Make big profits on the crude, protect the profits by owning pipelines and tankers so that transportation earnings do not get siphoned off to others; and finally, own sufficient refining and marketing equipment to dispose of your products at cost or better."

²
American Petroleum Institute, Petroleum Industry Hearings Before The Temporary National Economic Committee, the Lord Baltimore Press, 1942, p.42.

revealed that the marketing expense of major integrated companies was considerably larger than non-integrated marketers, Paul Hadlick charged that major companies were subsidizing competition with independent marketers. He referred to a quote made by a Vice President of Gulf Oil that "Gulf's profits from the transportation of crude oil made it unnecessary for its service stations to make a profit."¹ A prospectus from Texaco revealed that the company's marketing operation incurred losses from 1930 to 1935 but even so, it had nonetheless performed its major function of providing assured outlets for the company's crude.² de Chazeau and Kahn quoted the president of a major company as stating, "Marketing is a way of getting more for our crude than selling it to Standard of New Jersey."³

In an attempt to gain maximum consumer exposure and thereby expand their share of the market, the majors have been able to offset marketing costs and the proliferation of service stations by profits obtained throughout the integrated channel. "Forward integration is a sales weapon. Like all promotional expense, it is incurred in the hope of a profit; but the crucial profit to be gained is the sale of product, not from the business of marketing

¹
Ibid, p.45.

²
Ibid.

³
Melvin de Chazeau and Alfred E. Kahn, op.cit. p.364.

as such."¹ Not only has this practice come under severe criticism but so has their over concern with wasteful aspects of non-price competition.

Bain has suggested that active price competition be encouraged to reduce marketing costs and has therefore recommended the following: (1) repeal of laws legalizing resale price maintenance; (2) application of pressure on local councils to modify their regulations against service stations having large storage capacities (outlets of this kind have been able to reduce distribution costs by combining both the wholesale and retail functions; however, ordinances have been passed on the grounds that they create an undue fire hazard. It is this argument that is presently preventing the development of self-service gasoline retailing in many areas); (3) encouraging the development of true independent gasoline jobbers; (4) requiring that refiners dispose of and be fully divorced from their retail distribution facilities, and (5) encouraging agreements among integrated refiners to limit non-price competition and resale price maintenance.² Through the encouragement of active price competition at the retail level, the profusion of sub-marginal outlets would be eliminated and lower consumer prices would be the result.

¹
Ibid, p.515.

²
Bain, op.cit., pp.96-99.

Bain identified four major aspects of non-price competition as follows:

1. The continuous improvement of the basic product.
2. The provision of a very large number of retail service stations at convenient locations and with considerable excess capacity.
3. The provision of numerous free services for the motorist, including radiator, tire, battery and windshield service, restroom facilities, road maps, travel advice, and give away programs, etc.
4. The provision of aesthetic satisfactions through attractive service stations and through expenditures on sales promotion and advertising.¹

There can be little argument that these advantages are important, the question, however, is whether they are important enough to justify the higher costs to consumers.² The industry's concern with developing higher octane gasoline illustrates both the benefits and wasteful aspects of non-price competition. While higher octane fuels allow for improved engine performance and fuel economy, only a small fraction of motorists are able to take advantage of the potentialities of the fuel. Also, since

¹ Joe S. Bain, Economics of the Pacific Coast Petroleum Industry, Part II, Berkeley and Los Angeles: University of California Press, 1949, p.242.

² See de Chazeau and Kahn, op.cit., pp.303-311, for a description of wasteful aspects of non-price competition in petroleum.

consumers are unable to determine which brand of gasoline is better than others (if indeed there is a difference), the majors spend large sums on advertising to tell consumers of the superior qualities of their brands. However, since all firms are able to spend freely on promotion, and since the demand for gasoline in total is inelastic, the funds spent only contribute to higher costs of marketing.

Also, while many consumers may desire attractively designed outlets located on high rent land and be willing to pay a higher price for this benefit, the price conscious consumer (unless he finds a discount station) must pay for this service whether he wants to or not. Oil company practices of stealing each other's dealers, loaning money and equipment as incentives to operate their stations, building outlets on corner lots not so much to gain representation but to prevent competitors from doing so, all lead to higher marketing costs and to higher gasoline prices.

It is the practice of building outlets in mass that has contributed to the largest costs in marketing.¹ The overbuilding of stations has resulted in excess industry capacity and associated

¹
See The Gasoline Marketing Enquiry Committee, op.cit., p.442. The report revealed that industry expenditures on service stations, expressed in cents per gallon, approximated 3.28 cents. This exceeds the total cost for exploration and production of 3 cents per gallon.

high dealer turnover. As a result, several governments have already taken steps to limit service station growth.¹ Dealers in Alberta reported that the typical service station in the province could handle over 2-1/2 its present volume of business without any change in staff hours or facilities.² A sample of 16 stations in South Edmonton, during peak hours, revealed that the gasoline attendant's time was distributed as follows:

(1) Gasoline Sales	25%
(2) Waiting For Gasoline Sales	21%
(3) Merchandise Sales	4%
(4) Repair And Service	34%
(5) Administration and Clean Up	16%

It is no wonder that after completion of its economic analysis of the Edmonton and Calgary retail gasoline markets, the Gasoline Marketing Enquiry Committee concluded that Edmonton required as few as 136 stations (a reduction of 226), while Calgary needed only 165 stations (a reduction of 204).⁴

¹
Ibid., p.338.

²
Ibid., pp.344-346.

³
Ibid., p.368.

⁴
Ibid., pp.351-371.

It can easily be recognized that the structure of the industry together with its emphasis on non-price competition has created imbalances in gasoline marketing. Since the majors are avoiding price competition, self-service retailing, developed by aggressive independent marketers, can go far in improving the current situation.

CHAPTER IV

SELF-SERVICE GASOLINE RETAILING

The strategy behind self-service operations is relatively simple. By minimizing capital investment, by keeping overhead to an absolute minimum, by eliminating labor and services, and by offering a substantial concession from the prevailing market price, profitable, high-volume, low-cost outlets are the result.¹ It is this type of station that is rapidly becoming popular with price conscious consumers.

CHARACTERISTICS OF SELF-SERVICE STATIONS

Generally speaking, the typical self-service station has the following characteristics:

1. Gasoline is offered for sale at a substantial discount² from the current market price. Since service has been eliminated the consumer must fill his own tank; check his own oil, battery, tires, etc.; clean his own windshield; and perform all other services generally associated with the gasoline attendant.

¹ Ralph Cassady, Jr., and Wylie L. Jones, The Nature Of Competition In Gasoline Distribution At The Retail Level, Berkeley and Los Angeles: University of California Press, 1951, p.123, reported that some self-serves in Los Angeles sold from 40 to 60 times the volume of conventional service stations.

² National Petroleum News, January 1969, p.50, reported that Pat Griffin from Fort Collins, Colorado, priced 8 cents below the majors on regular gasoline and 10 cents below on premium.

2. These outlets are generally located on high volume traffic arteries. However, since the price conscious motorist will go out of his way to make the purchase, successful operations have been developed on less accessible locations.
3. Self-serve stations tend to be located on lower cost land than conventional outlets.
4. Successful operations depend on high volume sales. As a result, stations tend to be located on spacious land areas, capable of handling hundreds of cars per day. Also, numerous pumps are required to facilitate the smooth flow of traffic through the lot.¹
5. Price signs are aggressively displayed to advertise the discount or price offered.
6. The sales office contains specialized equipment for controlling the operation of pumps. Coin operated pumps, however, are also becoming popular.
7. To handle the large volume of gasoline sold, large storage facilities are required. The typical self-service outlet has from three to four times the storage capacity of conventional stations.

¹
One self-serve "expert" reported that six islands containing eighteen pumps would be the optimum. Cassady and Jones, *op.cit.*, p.126.

8. Since the self-service movement is being promoted by independent gasoline marketers, it goes without saying that they must have a guaranteed source of supply from either independent or major refiners.¹

While the key to success for self-serves results in their ability to market a top quality product at lower than market price, consumers are also attracted to them because of their spaciousness, ease of access, and reduced fill-up time. Thus, while price is no doubt important, it may not be the sole factor for success.

CURRENT MARKET TRENDS

1. The American Self-Service Trend

Self-service in gasoline retailing has experienced rapid growth since 1964, as this was the year that pump manufacturers began to make remote control and coin operated pumps available. With the combination of equipment, economies in station operation, and enthusiastic consumer acceptance; self-service promoters have been successful, in many areas, in having existing restrictive legislation changed to favor self-service development.² As a result the total number of such outlets in the U.S. exceeds 2500, up 1000 from only a year ago. Over 5000 units are predicted for

¹
Ibid, pp.122-130.

²
National Petroleum News, June 1969, p.74, reported that only eighteen states outlaw self-service operations, a reduction of five from one year ago.

the next year or two. Even so, self-service operations have only one percent of the American retail gasoline market.¹

The prime promoters of self-service operations are independent gasoline marketers, many who are not necessarily acquainted with the oil industry. They have been able to see profit potentials in gasoline tie-ins with such operations as grocery stores, hamburger stands, car washes, liquor stores, dry cleaners, etc. The typical arrangement has marketers lease land from store operators and install gasoline storage and dispensing equipment. Approximately one-half of the 2500 self-serves are tied in with other operations.²

Some of the larger independents promoting the self-service trend are as follows:

- (1) Tenneco Oil Co. with approximately 75 outlets in combination with other businesses and convenience stores.
- (2) Pioneer Industries of Fort Worth, Texas with 61 outlets.
- (3) Farmariss Oil And Refining Company of Hobbs, New Mexico with 50 stations.
- (4) Caribou-Four Corners Oil Inc., of Afton, Wyoming with 35 outlets.
- (5) The Frontier division of Husky Oil has 70 self-service stations.

¹
Ibid.

²
Ibid, p.75.

- (6) Save-More of Los Angeles with over 50 stations tied-in¹ with convenience stores.

The self-service "king" is Pat Griffin from Fort Collins, Colorado. His 93 gasamat outlets, which are distributed over 11 Western States, sell over 50 million gallons of gasoline.² His marketing strategy is to locate in small towns and offer discounts of up to 10 cents per gallon. The typical station, located on one acre of land, contains about 8 pumps and is supervised by a retired couple living right on the site. The pumps are activated by patented tokens rather than coins.

It is interesting to note that Mr. Griffin does not like to locate on busy corners as he believes consumers may have problems getting in and out of the station. Capital investment per station ranges from between \$50,000 to \$150,000 per outlet, and the outlets are in operation from 6 A.M. to 10 P.M. each day. Approximately 60 percent of his volume is sold to women and middle income consumers.

As revealed by the following quotation, Mr. Griffin's development of self-service operations has not been without difficulty.

¹
Ibid, pp. 75-76.

²
National Petroleum News, January 1969, pp. 50-54.

"Five years ago nine out of ten towns banned self-service, and most still do.¹ We've had run-ins nearly everywhere. Some fire chief is uninformed, or someone has political or business objections. One fire chief in New Mexico owned a Chevron station. They all kind of brand you a criminal. We've never failed to get in, though."²

The following table outlines the top self-service states together with the number of outlets. Approximately 75 percent of the stations are located in the Western States.

TABLE X

TOP SELF-SERVICE STATES
AND NUMBER OF OUTLETS

<u>State</u>	<u>OUTLETS</u>
Colorado	350
Texas	325
California	180
Arizona	150
Utah	105
Idaho	104
Oklahoma	100
New Mexico	75
Missouri	75
Louisiana	60
North Carolina	50

¹
Not only has Mr. Griffin's stations never been involved in a fire, but his insurance rate is below those of conventional outlets, Ibid.

²
Ibid., p.53.

Montana	44
Wyoming	43
Kentucky	40

Source: National Petroleum News, June, 1969, p.76.

Aggressive independent gasoline marketers in Idaho have captured over 25 percent of the state's retail gasoline market. From 1967 to 1968 their market share rose from 21.93 percent to 25.83 percent, or from 75,363,000 gallons to 91,248,000 gallons. Of the 16 million gallon increase, approximately 50 percent is attributed to self-service operations which are presently discounting 8 cents below market. Approximately 25,000,000 gallons or 7 per cent of the state's retail gasoline market is now held by self-service stations.¹

In Colorado self-service operations have increased their market share from only 3 percent two years ago to approximately 9 percent today. The growth of self-serves in three states is illustrated by the following data.

¹
National Petroleum News, June, 1969, p.76.

GROWTH OF SELF-SERVES
BY NUMBER IN 3 STATES ¹

	Colorado	Idaho	Montana
1964	42	5	3
1965	90	27	10
1966	127	50	17
1967	236	66	27
1968	350	104	44

In Baton Rouge, Louisiana, self-service development has made rapid advances within the past year. While 40 to 45 self-serves are presently in operation, over 100 are predicted within the next year. The self-service outlets have been offering consumers a 4 cent per gallon discount on regular gasoline and a 6 cent discount on premium. Until recently, major marketers did not believe that the price difference would threaten their volume; however, several stations have dropped their price to within 2 cents of the self-serves to prevent
²
gallongage losses.

In Salt Lake City, Utah, approximately 12 percent of
³
the outlets offer self-service at prices of 4 cents below market.

¹
Ibid, p.78.

²
National Petroleum News, May, 1969, pp.100-103.

³
National Petroleum News, May, 1968, p.68.

Self-serves in Tucson, Arizona, have from 14 to 19 percent of the retail market.¹ Four self-serves recently established in Reno, Nevada, claim 2.3 percent of the market.²

Self-service outlets in Yakima and Pasco, Washington, are reported selling 50,000 and 40,000 gallons per month respectively.³ Two outlets in California, which placed cashiers at the exit so as to increase the speed of traffic flow, are reported selling 100,000 gallons per month.⁴ A Ford dealer in Springfield, Massachusetts, has a self-serve which sells 175,000 gallons per month at discounts of from 6 to 7 cents below market. The station is located on a small 32' by 106' plot; volume of 300,000 gallons per month is expected to be within reach.⁵

Consumer acceptance of the self-service trend has allowed independent marketers to make significant advances in gasoline retailing. While the majors are in no hurry to switch from their

¹
National Petroleum News, June, 1969, p.76.

²
National Petroleum News, November, 1968, p.77.

³
Ibid, pp.76-77.

⁴
National Petroleum News, June 1969, p.76.

⁵
National Petroleum News, April 1969, pp.128-129.

present marketing strategy, some have begun market testing of the self-service concept.

- (1) This Spring, Humble Oil opened a total of 25 self-serves in Texas, California, Louisiana and Nevada. Initial testing is to determine consumer acceptance and therefore no discounts are being offered. It is expected however, that price-volume studies will take place shortly.
- (2) In 1967, American Oil opened up five company-operated self-service stations together with three lessee operated split stations and a lessee operated self-service and car wash operation. Shortly thereafter Union Oil of California began to meet American's self-service prices and competition followed. Near the end of 1968 American turned over the five company operated stations to lessees. Even without a price advantage, however, the five self-serves are reported selling an average of 50,000 gallons per month. American is also testing self-serves in Salt Lake City, Tucson and Cheyenne.
- (3) Phillips' self-serves in Tucson were converted to unbranded stations and they are now pricing at the independent self-service level. While this strategy seemed to work for a while, the three outlets report a total of only 48,000 gallons per month.

- (4) In upstate New York, Mobil Oil is presently testing four outlets. At three stations self-service operates in conjunction with full service while at the fourth outlet self-service operates only at night. Pricing at the self-service island is only 2 cents below normal, and while gallonage is reported to be modest, approximately 20 to 30 percent of Mobil's customers favor self-service.
- (5) On April 1, 1969, Cities Service converted its five outlets in Little Rock, Arkansas to self-service. Discounts range¹ between 2 and 3 cents per gallon.

While most major marketers are studying the self-service concept, only a few have actually begun market testing.

II. The European Self-Service Trend

The European acceptance of self-service stations is apparently greater than in the U.S. It is developing rapidly because it solves the problems of labor scarcity and labor costs. British Petroleum has recently installed coin operated pumps at 2000 stations in West Germany.² Other countries turning to self-service

¹
National Petroleum News, June, 1966, pp.81-83.

²
National Petroleum News, March, 1966, p.120.

include: Belgium, Denmark, Italy, Switzerland, Czechoslovakia,¹ Holland, Britain, Norway, Finland, and Sweden. In Britain, more than 200 self-serves have been opened since 1964.² Most outlets, however, are not offering any discounts.

Self-service development in Sweden has been given impetus because of its relatively high employment rate which limits those seeking employment in service stations. With discounts of 2 cents per gallon the self-serves have become an accepted method of gasoline marketing. Over 50 percent of Stockholm's stations are self-serves, as are over 12 percent of Sweden's outlets.³

¹
Pamphlet received from Gilbarco Canada Ltd.

²
The Economist, April 13, 1968.

³
National Petroleum News, March 1966

TABLE XI

SELF-SERVICE IN SWEDEN

<u>Company</u>	<u>All Stations</u>	<u>Self-Service</u>	<u>Percent Self-Service</u>
Esso	1,655	182	10.9%
Shell	1,681	171	10.1%
Caltex	1,245	98	7.8%
Gulf	1,451	105	7.2%
British Petroleum	933	86	9.2%
Nynaes	581	53	9.1%
IC Oil Kompagniet	886	216	24.4%
Koppartrans (Shell)	302	146	48.3%
Mobil	225	57	25.3%
Uno-X & Din-X	196	42	21.4%
Murco	33	31	93.9%
Krarntorp	<u>4</u>	<u>-</u>	<u>-</u>
Totals	9,192	1,187	12.9%

Source: National Petroleum News, March, 1966, p.121

III The Canadian Self-Service Trend

Self-service development in Canada is negligible, partially due to provincial laws¹ prohibiting this concept, and partially because of the majors overwhelming dominance of gasoline marketing. The only outlets known to be in operation are in Winnipeg² and Burnaby³.

SELF-SERVICE EQUIPMENT

Although pump manufacturers have been mass producing self-service equipment for only the past few years, the following systems appear to be the most popular.

- (1) Coin-operated, bill-operated, and card-operated self-service pumps.
- (2) Remote-dispensing pumps.
- (3) Pre-set units.

¹ Correspondence from oil companies and provincial Fire Marshals suggested that self-service stations might be permitted in British Columbia, Saskatchewan, Ontario, Quebec, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland.

² While Manitoba prohibits self-service outlets, two outlets in Winnipeg have been permitted as pilot projects to assess their danger as a fire hazard (one is still in operation). Several years ago Imperial Oil was given permission to open a self-service station in Winnipeg but after about six months it was discontinued because of the Fire Marshal's concern for safety.

³ Canadian Petroleum, March, 1966, p.67, reported that Mr. William Henderson has been in the self-service business for about ten years and has an operation in both Winnipeg and Burnaby.

The typical money or card accepting unit consists of a control console located between two pumps. The console energizes the pump and thus controls sale of the product. Instructions for operation are provided on both the console and pumps.

With the remote-dispensing system the operation of pumps and payment for purchase are controlled from the cashier's office. Both post-payment and pre-payment systems are used in conjunction with remote-dispensing. In the post-payment system the customer drives up to the pump, and indicates the amount of purchase desired through an intercom connecting to the cashier's office. The cashier then sets this amount on a keyboard and presses a button which controls the operation of the pump. Upon serving himself, the customer proceeds to the cashier's office and pays for his purchase.

In the pre-payment system the customer pays for his purchase and then proceeds to fill his tank. This system is used when gasoline is sold as a sideline; a cashier takes payment for the product while collecting for grocery and other items.

Realizing that many customers prefer to purchase a specified dollar amount rather than a tank full, the pre-set unit was designed for this purpose. The attendant then sets the pump for the amount of gasoline desired by the customer.

THE LEGAL PROBLEM

Self-service outlets are prohibited by many provincial, state and local municipalities because they are presumed to be a fire hazard. This restriction is based on the reasoning that cus-

tomers may be careless while handling the product. On careful analysis, however, one can only conclude that the safety issue is used as a crutch to prevent the entry of a powerful competitor.

The Teamsters Union was against self-service in Los Angeles because it was suggested that it might create an unemployment problem. As a result, it was instrumental in having self-serves banned from the city. The ban however is based on the fire hazard factor rather than the unemployment problem. Also, the union together with the majors were successful in having self-serves banned in Seattle.¹

Dealer groups² continue to attack self-service on the safety issue. Service station groups in Houston issued statements regarding the dangers involved when inexperienced people handle gasoline pumps. In Denver, a film showed a pedestrian stopping to light his cigarette by a self-service station just as a six year old boy proceeded to fill his parents' car.³ In Mesquite, Texas, after a self-service station was opened, after battling with local authorities, a committee headed by an oil

¹
Cassady and Jones, op.cit., p.97.

²
See Cassady, op.cit., p.271, for a detailed case example of the influence of gasoline retailers in having self-serves banned in New Jersey.

³
Business Week, October 1, 1966, p.130.

jobber was formed to fight against further self-service develop-
ment.¹

Typical of dealer reaction was the comment from an oil jobber in Baton Rouge. "We waited too long. There isn't a way in the world now that we could outlaw them because there are too many. We might get some action if one of the things blew up. I've been waiting for that to happen but there have been no accidents I know of."²

In Ontario, where the Ontario Retail Gasoline Association is known to oppose the self-service trend, the assistant to the O.R.G.A. Executive Secretary was quoted as stating: "I don't feel it is in the best interest of us."³

In the face of tremendous opposition, self-service promoters are slowly winning their case. At the National Fire Protection Association's annual meeting this Spring, the code dealing with self-service stations was amended to read: "The attendant's primary functions shall be to supervise, observe and control the dispensing of Class I liquids while the said liquids are being dispensed."⁴ The N.F.P.A. codes are observed by most state and

¹
National Petroleum News, April, 1965, p.106.

²
National Petroleum News, May 1969, p.103.

³
Canadian Petroleum, March 1966, pp.67-68.

⁴
National Petroleum News, June 1969.

local fire chiefs.¹ It is only a matter of time before the bans will be lifted. "Putting gasoline in cars is not a skill. It is as easy as pushing a food cart up and down supermarket aisles. Years ago, the diehards said the supermarkets wouldn't work because no women would push those carts. Many of those dissenters died off. So will many who fight the self-service trend."²

¹ It is interesting to note that Ontario banned self-service stations up until July of 1969, at which time the gasoline handling act was revised to allow development under certain conditions. The main provisions are that pre-set dispensing equipment be used in conjunction with automatic nozzles.

² National Petroleum News, June 1969, p.81.

CHAPTER V

THE SELF-SERVICE STATION: A FEASIBILITY STUDY

Current market trends indicate that self-service gasoline retailing is developing in two major areas: (1) the self-service station, and (2) self-service gasoline tie-ins with convenience stores. This chapter offers an economic analysis of these two concepts as they might apply to the Edmonton market.¹

AN ECONOMIC ANALYSIS

Of major importance in any investment proposal is the projected sales volume or revenue to be obtained over the life of the project. However, in view of the limited information available for self-service operations, without actual market testing, any sales projection² would be based mainly on intuition.

¹ Self-Service gasoline retailing is presently illegal in Alberta. The Provincial Fire Marshal stated he was concerned that inexperience and uninformed consumers would create a fire hazard. While he was interested to note Ontario's recent revision to their Gasoline Handling Act, the Fire Marshal did not foresee any changes to the Alberta Fire Prevention Act in the near future.

² See Mason P. Rosenthal, "Gasoline Sales Volume Estimation For Individual Service Stations" (unpublished Doctoral thesis, The University of Chicago, 1965). An equation was developed relating sales volumes of existing service stations to the following: (1) traffic, (2) neighborhood population, (3) competition from major marketers, (4) competition from independent marketers, (5) competition between stations carrying the same brand, (6) spaciousness, and (7) quality of service. The multiple correlation coefficient of the equation is $r = .82$ indicating a significant relationship between sales volume and the above variables. The importance of price however, was underplayed in the analysis.

I have, therefore, estimated the capital investment required for the two proposals and, based on the following assumptions, have projected a required sales volume:

- (a) Investor has total funds available for the two proposals.
- (b) Investor requires a 15 percent after tax return on investment plus a return of capital within 15 years.
- (c) Straight line depreciation calculated over 15 years - no salvage value of equipment.
- (d) No appreciation in land value.

I. The Self-Service Station

The proposed outlet will consist of an attractive 15' by 15' sales office with two pump islands supporting a total of eight dispensing pumps, and located on a typical service station site of approximately 125' by 150'. The general appearance of the operation will be attractive in design and layout. The following is a detailed cost estimate.

	<u>Cost</u>	<u>Total</u>
1. <u>Building</u>		
(a) Type - gas bar		
(b) Description - 15' x 15' sales office with one washroom & storage room	\$4,000	
(c) Heating - gas fired, 100,000 B.T.U.	\$ 250	

¹
The cost estimate was prepared with the assistance of Gulf Canada Ltd.

	<u>Cost</u>	<u>Total</u>
(d) Restroom - standard type	\$ 300	
(e) Painting	\$ 200	
(f) Signs, Letters - plastic illuminated sign	\$ 400	
(g) Permits	<u>\$ 20</u>	\$5,170
2. <u>Sewage Disposal and Water Supply</u>		
(a) Connections to sewer	\$ 100	
(b) Connections to water mains	\$ 75	
(c) Miscellaneous - two catch basins for storm sewer	<u>\$ 800</u>	\$ 975
3. <u>Miscellaneous Construction</u>		
(a) Excavation - 600 cu.yds. @ \$2.00	\$1,200	
(b) Ramps and Curb Cuts - 80 Lin.Ft. @ \$5.00	\$ 400	
(c) Paving - Concrete 1824 Sq.Ft. @ \$.80	\$1,459	
- Asphalt 1270 Sq.Yds. @ \$3.00	\$3,810	
(d) Pump Islands - two 4' x 16'	\$ 300	
(e) Fencing - 150 Lin.Ft. @ \$4.00	\$ 600	
(f) Miscellaneous - painting forms	<u>\$ 100</u>	\$7,859
4. <u>Equipment - Pumps</u>		
(a) Four Double Pump Preset Units @ \$3,000	\$12,000	
(b) Installation of pumps on island	\$ 100	
(c) Miscellaneous - wiring of pumps	<u>\$ 465</u>	\$12,565

1

Costs and selling prices for this equipment have not been established in Canada. Gilbarco Canada Ltd. has suggested that a preset unit and two pumps would cost \$2,250.00 before taxes. Also, the equipment would have to be imported from the parent company in the United States and duty charged. I have therefore used \$3,000 as an approximate estimate.

	<u>Cost</u>	<u>Total</u>
5. <u>Equipment - Tanks And Piping</u>		
(a) Tanks - 2 x 10,000 gallon underground storage tanks	\$ 3,700	
(b) Fittings	\$ 1,600	
(c) Installation (including piping)	<u>\$ 1,700</u>	\$ 7,000
6. <u>Equipment - Lighting And Signs</u>		
(a) Floodlight Poles - two 26' poles @ \$90	\$ 180	
(b) Floodlights - two 1000 w.mercury vapor @ \$235.00	\$ 470	
(c) Island Light Poles - two V type poles @ \$100.00	\$ 200	
(d) Island lights - two fluorescent @ \$600	\$ 1,200	
(e) Identification sign and pole	\$ 800	
(f) Installation and Wiring	\$ 1,465	
(g) Miscellaneous - painting poles and bases	<u>\$ 100</u>	\$ 4,415
7. <u>Miscellaneous</u>		\$ 1,000
8. <u>Land</u>		
(a) Dimensions - Frontage 150', depth 125'	\$45,000	
(b) Fees: legal, survey	<u>\$ 400</u>	\$45,400
Total Capital Required		<u><u>\$84,394</u></u> ²

¹
The Gasoline Marketing Enquiry Committee, Gasoline Marketing, December 1968, pp.140-141, reported that the average service station land value of major oil companies was over \$41,000.

²
The Capital investment total includes the purchase of modern equipment; a reduction in investment could be achieved with the use of older secondhand items. Since the self-service station would appeal to price conscious consumers, attractiveness may well be sacrificed without reducing the sales volume.

Based on the above capital requirement, the following discounted cash flow statements¹ have been prepared to illustrate the sales volume required.

² <u>Required Volume</u>	³ <u>Retail Price</u>	⁴ <u>Cost of Product</u>	<u>Gross Profit Per Gallon</u>	<u>Gross Profit</u>
Regular 320,000 Gals.	38.9 Cts.	32 Cts.	6.9 Cts.	\$22,080
Premium <u>160,000 Gals.</u>	43.9 Cts.	37 Cts.	6.9 Cts.	<u>\$11,040</u>
Total 480,000 Gals.		Total Revenue.....		\$33,120

¹ The discounted cash flow analysis uses the present value concept, thus taking into account the timing of profit returns.

² This analysis includes only gasoline sales volume. Since the self-service outlet does not have oil change facilities, any oil sales projection together with sales estimates for accessory items, would be sheer guesswork.

³ The selling price represents a 6 to 7 cents per gallon discount from the current market price. This pricing strategy is based partially on the following: "The key differential is 4 cents - it means steady business. At 3 cents business tails off; at 5 cents it takes off." National Petroleum News, June 1969, p.78.

⁴ The cost figure is not firm. In my discussions with major suppliers it was suggested that an independent marketer could possibly obtain product at a 1 cent per gallon discount from dealer price for every 100,000 gallons, to a maximum of 5 cents. In this analysis a 4 cent discount has been assumed. It is interesting to note that two suppliers were not supplying independents at the present time and stated that they have not bid on independent quotations for some time. See The Gasoline Enquiry Committee, op.cit., p.471, for a table showing that commercial accounts obtain discounts up to 8.5 cents per gallon.

1	
<u>Expenses</u>	
Heat, light and power	\$ 900
Maintenance	\$ 700
Accounting & Miscellaneous	\$ 700
Advertising	\$ 1,000
Snow Removal	\$ 200
Insurance	\$ 400
Taxes	\$ 1,000
Labor (based on 16 Hr./Day operation)	\$11,648
Depreciation	<u>\$ 2,599</u>
Total Expense	<u>\$ 19,147</u>
Net Profit Before Tax	<u>\$ 13,973</u>
Net Profit After Tax (Tax Rate 21%)	\$ 11,039
Add Back: Depreciation or Capital Recapture	<u>\$ 2,599</u>
Net Cash Flow	<u>\$ 13,638</u> 2

1
The Gasoline Marketing Enquiry Committee, op.cit.,
pp.272-299.

2
I have assumed that any increase in costs would be offset by increases in sales so that the net cash flow figure of \$13,638 would be obtained for each of the 15 years. The present value of \$13,638 to be received for the next 15 years (investor desires 15% return on investment plus return of capital within 15 years) is \$79,741 ($\$13,638 \times 5.847$). The present value of the \$45,400 land investment received 15 years from now is worth \$5,579 today ($\$45,400 \times .1229$). Thus, the \$84,394 investment is returned within the required time period.

Thus, to obtain a 15 per cent after tax return on investment and a return of invested capital within 15 years, a revenue of \$13,638 per year is required. To obtain this revenue, an initial gasoline sales volume of just under 480,000 gallons is necessary.

<u>Required Volume</u>	¹ <u>Retail Price</u>	<u>Cost of Product</u>	<u>Gross Profit Per Gallon</u>	<u>Gross Profit</u>
Regular 246,667 Gals.	40.9 Cts.	32 Cts.	8.9 Cts.	\$21,953
Premium <u>123,333 Gals.</u>	45.9 Cts.	37 Cts.	8.9 Cts.	<u>\$10,976</u>
Total 370,000 Gals.		Total Revenue.....		\$32,929

Expenses

Heat, light and power	\$ 900
Maintenance	\$ 700
Accounting & Miscellaneous	\$ 700
Advertising	\$ 1,000
Snow Removal	\$ 200
Insurance	\$ 400
Taxes	\$ 1,000
Labor (based on 16 Hr./Day operation)	\$11,648
Depreciation	<u>\$ 2,599</u>
Total Expense	<u>\$19,147</u>

¹
The retail price represents a 4 to 5 cents per gallon discount from the current market price.

Net Profit Before Tax	<u>\$ 13,782</u>
Net Profit After Tax (Tax Rate 21%)	\$ 10,888
Add Back Depreciation or Capital Recapture	<u>\$ 2,599</u>
Net Cash Flow	\$ 13,487

To obtain the required revenue to meet the investor's criteria, an initial gasoline sales volume of just under 370,000 gallons must be realized.

II. A Self-Service Tie-In With a Convenience Store

This proposal involves setting up pumps and storage facilities in conjunction with a store operation and paying the owner a commission for operation.

	<u>Cost</u>	<u>Total</u>
1. Equipment - Pumps		
(a) Two preset units	\$3,000	
(b) Installation and wiring	<u>\$ 300</u>	\$3,300
2. Equipment - Tanks and Piping		
(a) Tanks - 2 x 5,000 gallon underground storage tanks @ \$1,138 ea.	\$2,276	
(b) Installation and Fittings	<u>\$ 500</u>	\$2,776
3. Equipment - Lighting And Signs		
(a) Island Light Pole - one V type pole	\$ 100	
(b) Island Lights - fluorescent	\$ 600	
(c) Identification Sign and Pole	\$ 800	
(d) Installation and Wiring	<u>\$1,000</u>	\$2,500

	<u>Cost</u>	<u>Total</u>
4. Miscellaneous Construction		
(a) Pump Island - one 4' x 10'	\$ 150	
(b) Miscellaneous	<u>\$ 100</u>	<u>\$ 250</u>
Total Capital Required		\$8,826 ¹

Based on the above capital requirement, the following sales volumes have been projected:

<u>Required Volume</u>	<u>Retail Price</u>	² <u>Cost of Product</u>	<u>Commission to Store Operator</u>	<u>Gross Profit Per Gal.</u>	<u>Gross Profit</u>
Regular 100,000 Gals.	38.9 Cts.	34 Cts.	3.0 Cts.	1.9 Cts.	\$1,900
Premium <u>50,000 Gals.</u>	43.9 Cts.	39 Cts.	3.0 Cts.	1.9 Cts.	<u>\$ 950</u>
Total 150,000 Gals.			Total Revenue.....		\$2,850

Expenses

Maintenance	\$100	
Accounting & Miscellaneous	\$700	
Insurance	\$150	
Taxes	\$150	
Depreciation	<u>\$588</u>	
Total Expense		<u>\$1,688</u>

¹ National Petroleum News, June 1969, p.76, reported that most tie-in operations can be installed for under \$10,000.

² Assume independent marketer obtains a 2 cent per gallon discount from dealer price.

Net Profit Before Taxes	<u>\$1,162</u>
Net Profit After Taxes (Tax Rate 21%)	\$ 918
Add Back Depreciation or Capital Recapture	<u>\$ 588</u>
Net Cash Flow	\$1,506

Assuming a net cash flow of \$1,506 per year for the next 15 years, an initial sales volume of just over 150,000 gallons is required.

<u>Estimated Volume</u>	<u>Retail Price</u>	<u>Cost of Product</u>	<u>Commission To Store Operator</u>	<u>Gross Profit Per Gal.</u>	<u>Gross Profit</u>
Regular 50,000 Gals.	40.9 Cts.	34 Cts.	3.0 Cts.	3.9Cts.	\$1,950
Premium <u>25,000 Gals.</u>	45.9 Cts.	39 Cts.	3.0 Cts.	3.9Cts.	<u>\$ 975</u>
Total 75,000 Gals.			Total Revenue.....		\$2,925

Expenses

Maintenance	\$100	
Accounting & Miscellaneous	\$700	
Insurance	\$150	
Taxes	\$150	
Depreciation	<u>\$588</u>	
Total Expense		<u>\$1,688</u>
Net Profit Before Taxes		<u>\$1,237</u>
Net Profit After Taxes (Tax Rate 21%)		\$ 978
Add Back Depreciation or Capital Recapture		<u>\$ 588</u>
Net Cash Flow		\$1,566

Assuming a net cash flow of \$1,566 per year for the next 15 years, an initial sales volume of just under 75,000 gallons is required.

FEASIBILITY

Since service station sales are highly dependent upon the station's accessibility to consumers, a further study on¹ site analysis would be required to determine whether the required sales volumes could be obtained.

Data obtained from the Dominion Bureau of Statistics revealed that 74,322,000 gallons of gasoline were retailed through 353 service stations in Edmonton in 1968. This averages out to 210,543 gallons per outlet. (The average retail sales volume per station for eight major metropolitan areas in Canada in 1968 was 210,387 gallons). Also, it was revealed that the average gasoline sales volume of large department store operations in Al-²berta was 593,000 gallons in 1965.

In view of the preceding analysis and information available on: (1) the buying motives of gasoline consumers, (2) the elasticity of demand for gasoline from a particular station, (3) price-volume relationships, (4) the gains made by private brand discounters, and (5) the increasing popularity of the self-service station, it would seem that the required gasoline volumes are readily attainable.

¹ Since site analysis is beyond the scope of this paper, see Richard L. Nelson, The Selection of Retail Locations, F. W. Dodge Corporation, New York, 1958.

² The Gasoline Marketing Enquiry Committee, op.cit., p.106.

CHAPTER VI

RECOMMENDATION

Traditionally, innovations in gasoline marketing have come from the independents, with major marketers adopting ideas after cautious study and deliberation. The self-service concept is no different as the majors are slowly beginning to conduct market testing. Current trends however, indicate that the majors are reluctant to offer consumers more than a two cent discount with their self-service stations. And while self-service may well revolutionize gasoline distribution in the future, it is doubtful that a two cent price policy will bring it about.

The following was outlined by Moore¹ in his submission to the Special Committee of the legislature of British Columbia in March of 1968.

"There must be a sufficient number of dealers in each market to exert a downward pressure on pump prices. And there is not likely to be sufficient constraint on the dealer's markup unless 20 or 30 percent of the gasoline sold in a market is sold by 'gas bars' which adopt the strategy of 'low markup-high volume'. And it is usual for most of these gas bars to sell unbranded or private brand gasoline. Consequently, an assured supply of private brand gasoline to independent dealers at a competitive price is a necessary condition of a stable, healthy gasoline retailing industry. When the cut-rate dealer is not in the market, pump prices tend to be raised to cover costs - including the costs of excess capacity. And whenever this is the case, someone is bound to build more stations and add to the excess capacity. So the situation goes from bad to worse because the additional capacity adds

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The Gasoline Marketing Enquiry Committee, op.cit., pp.514-515.

to costs, the volume of sales per station decreases and an increase in the dealer's markup is required to enable the dealer to cover costs. There can be no curb upon capacity becoming wastefully excessive unless there are price cutters who push the pump price down to the minimum required to cover fair wages and profits when the station is handling all the customers possible during the peak hours of trade without keeping customers waiting."

History has shown that the majors have sought to dictate retail gasoline prices.¹ Independent nonintegrated marketers pricing too aggressively have in many instances, been cut off from their product supplies. Recently, it was reported that eight major oil companies were fined a total of \$550,000 for conspiring to regulate prices and sales to private brand distributors. The indictment stated that the majors had forced private branders to sell gasoline at a specified price.²

¹
See National Petroleum News, December 1969, pp.44-45, for another instance of major price fixing. In October 1969, a Philadelphia builder filed suit against twelve major oil companies alleging a conspiracy to raise, fix, stabilize, and maintain the tankwagon and retail prices of gasoline.

²
The Edmonton Journal, Wednesday, December 24, 1969, p.11.

Bryson's review of the independent marketer suggested that their future role depended upon the majors' subsidization of marketing outlets, and the availability of supply.¹ This thesis has concluded that to counterbalance the gigantic size of major companies, to alleviate the subsidization question, and to assist the revolution in gasoline distribution, independent marketers must be given governmental assurance of product supplies² at competitive prices.

"It is not possible definitely to resolve the question whether the better and quicker service which motorists enjoy because of this profusion of stations compensates for the higher cost of a capacity which is physically idle a good deal of the time. The point is, however, that the consumer is not in most areas given the opportunity to choose. In food retailing the chain and self-service supermarket, on the one hand, and the corner grocery on the other, offer the buyer a choice between price and service (personal attendance, location within walking distance, credit, etc.). In gasoline, a major cannot readily offer both alternatives, numerous, conveniently situated stations, and large volume low mark-up multipumps - and keep all of its dealers contented. Whatever the reason, most of the integrated firms offer only the former. It has been the independents who

¹ See Robert Bryson, Jr., "The Evolution of Private Brand Marketers In The Petroleum Industry," Unpublished Doctoral thesis, Indiana University, 1965, pp. 195-197.

² The Gasoline Marketing Enquiry Committee, op.cit., p.519, recommended that not only should a refinery supply off-brand wholesalers, but that the price charged should not exceed the transfer price from the refining division of the integrated company to its marketing division by more than one cent per gallon.

have pioneered since the war, in multipump and partial self-service stations, at lower prices; and they have, with increasing customer price-consciousness, in many places taken away so much business as to have been the prime instigators of price wars." ¹

Those channels of distribution which increase competition, encourage efficiency, and offer consumers an additional choice within the marketplace must be allowed to survive.

¹
Joel B. Dirlan and Alfred E. Kahn, "Leadership And Conflict In The Pricing of Gasoline," The Yale Law Journal, Vol. 61, 1952, p.848.

SELECTED BIBLIOGRAPHY

A. BOOKS

American Petroleum Institute, Petroleum Industry Hearings Before The Temporary National Economic Committee, The Lord Baltimore Press, 1942.

Bain, Joe S., The Economics Of The Pacific Coast Petroleum Industry, Parts II & III, Berkeley and Los Angeles: University of California Press, 1947, 1949.

Cassady, Ralph Jr. Price Making And Price Behavior In The Petroleum Industry, Volume 1, New Haven: Yale University Press, 1954.

Cassady, Ralph Jr. and Wylie L. Jones, The Nature of Competition In Gasoline Distribution At The Retail Level, Berkeley and Los Angeles: University of California Press, 1951.

de Chazeau, Melvin G., and Alfred E. Kahn, Integration And Competition In The Petroleum Industry, Volume 3, New Haven: Yale University Press, 1959.

Hartshorn, J. C., Oil Companies And Governments, Faber And Faber, London, 1962.

Imperial Oil Limited, Presentation To The Royal Commission On Gasoline Price Structure In British Columbia, 1965.

Learned, Edmund P., and Catherine C. Ellsworth, Gasoline Pricing In Ohio, Division of Research, Graduate School of Business, Harvard University, Boston, 1959.

Levitt, Theodore, Innovation In Marketing, McGraw-Hill Book Company, Inc., New York, 1962.

Lovejoy, Wallace F. and Paul T. Homan, Economic Aspects of Oil Conservation Regulation, published for Resources for the Future Inc., The John Hopkins Press, Baltimore, 1967.

McLean, John G., and Robert Wm. Haigh, The Growth of Integrated Oil Companies, Division of Research, Graduate School of Business Administration, Harvard University, Boston, 1954.

Rostow, Eugene V., A National Policy For The Oil Industry, New Haven: Yale University Press, 1948.

Shuman, Ronald B., The Petroleum Industry, Norman: University of Oklahoma Press, 1940.

Stanford Research Institute, An Analysis of Competition And Price Behavior In The British Columbia Petroleum Industry, 1964.

B. PERIODICALS

Adelman, H. A., "Effective Competition And The Antitrust Laws," Harvard Law Review, Volume 61, 1948.

Adelman, H. A., "Integration And Antitrust Policy," Harvard Law Review, Volume 63, 1949-50.

Atlantic, September, 1969.

Business Week, October 1, 1966.

Canadian Petroleum, March 1966.

Clover, Vernon T., "Price Influence of Unbranded Gasoline," Journal of Marketing, Volume 17, 1952-53.

Cross, James S., "Vertical Integration In The Oil Industry," Harvard Business Review, Volume 31, 1953.

Dirlan, Joel B., and Alfred E. Kahn, "Leadership And Conflict In The Pricing Of Gasoline", The Yale Law Journal, Volume 61, 1952.

The Economist, April 13, 1968.

Howard, Marshall C., "Interfirm Relations In Oil Products Markets," The Journal of Marketing, Volume 20, 1955-56.

National Petroleum News, April, 1965.

National Petroleum News, March, 1966.

National Petroleum News, May, 1968.

National Petroleum News, November, 1968.

National Petroleum News, January, 1969.

National Petroleum News, April, 1969.

National Petroleum News, May, 1969.

National Petroleum News, June, 1969.

National Petroleum News, December, 1969.

C. GOVERNMENT PUBLICATIONS

The Gasoline Marketing Enquiry Committee, Gasoline Marketing,
December 1968.

D. UNPUBLISHED MATERIAL

Bryson, Robert Jr., "The Evolution Of Private Brand Marketers
In The Petroleum Industry." Unpublished Doctoral thesis,
Indiana University, 1965.

Rosenthal, Mason P., "Gasoline Sales Volume Estimation For
Individual Service Stations." Unpublished Doctoral thesis,
The University of Chicago, 1965.

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